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MEDICINE AND THE COMMUNITY

The Ether Day Address Delivered by Professor Hans Zinsser, October 16, 1924, at the Massachusetts General Hospital

On this day, in 1846, modern surgery was ushered into the world. And, some twenty years later, it reached its majority when Lister introduced the principles of Pasteur into the operating room. It was an era of stupendous awakenings in the biological sciences. In 1821 Magendie had founded the first Physiological Journal. In 1834 Johannes Miller published his "Physiologie des Menschen" and Claude Bernard was beginning to lay the foundations of experimental physiology. The golden era of etiological discovery, begun in 1850, before the end of the nineties had revolutionized the clinic of infectious diseases, had initiated the sciences of epidemiology and preventive medicine. In 1856 the aniline dyes were discovered. Liebig was pioneering in biochemistry; Virchow's "Zellular Pathologie" started modern pathology on its course. A year later came the Origin of Species. Meanwhile, Pasteur had begun his experiments on crystals with their momentous influence on the knowledge of molecular structure; his work on the living nature of putrefaction and fermentation was begun and turned "all his ambition to the study of the putrid diseases" and eventually led to his investigations on infection and the mechanism of immunity. The year that gave us the tubercle bacillus saw the birth of pathogenic protozoology with Laveran's publication of the malarial plasmodium. Helmholtz was introducing the methods of physics into physiology; Mendel, the Abbot of Brumm, was uncovering laws of inheritance; Galton was founding biomathematics; Roux, Behring, Metchnikoff, Bordet, Fischer, Ehrlich, Arrhenius, Ross, Reed—in every direction new furrows were broken—new torches lighted. The sciences seem to have shared in that golden age of growing understanding, in that great liberation of the spirit that swept, like a vigorous breeze, across the nations of the world and made the nineteenth century the great era of religious, political and intellectual freedom.

Therefore, in gratefully remembering today the incalculable relief of human suffering which we owe to the logic and courage of Morton, Warren and their associates, and to the progressive intelligence with which this institution made possible their efforts, we may appropriately include in our gratitude the many other things in which we are more stoutly armed for the service of mankind than were our fathers. They opened great continents of comprehension, the fertile fields of which we cultivate; and, unlike terrestrial continents, new territories of the mind do not limit, but ever enlarge the scope of unexplored horizons. For it was largely the work of the physicians, naturalists, chemists and physicists of the last fifty or sixty years of the nineteenth century which dispelled the fogs of mystery and superstition which had prevented medicine from profiting by the progress of the sciences.

We of this generation have inherited these great riches and the youngest heirs are the medical students and house officers of hospitals like this one, into whose hands, if we are sincere and worthy of our heritage, we must pass these accumulated treasures of comprehension in such a way that they may receive them in the spirit of trustees of an estate administered to bear interest for mankind, and not as capital for the plying of a trade.

In a calling which, in its daily applications, must be practiced by man upon men, and in which the necessity of gaining a livelihood is a pressing one for most of its practitioners, one cannot, without absurdity, expect a universally exalted and sustained altruism. The sensible mind, tolerant through understanding, cannot demand that our young practitioners step out of the hospital into the world of their labours, like St. Francis, in hair-shirts, dedicated to poverty and self-sacrifice. We may hope for the occasional individual who will set aside the petty comforts of life, indifferent to the ambitions of lesser men; and indeed many of the great leaders of medicine have been of this spiritual stature. But the great mass of work that calls for our doing must be accomplished by the rank and file—many in number and of varied endowments—whose hands may be more gentle, whose hearts more full of sympathy and understanding for the very consciousness of essential brotherhood, in impulse and temptation, with the ignorant, the vicious and the sick in mind and body who may need their services. In the petty details of an arduous existence—in the discouragement of frequent failure and the consciousness of often groping in a twilight of inadequate understanding—still more in the fatigue of enthusiasm that results from the establishment of routine, many of us need to be reminded of the true purposes of our profession—the qualities in which medicine differs from all other callings—the reasons why it can never be a trade—in short, the true ethics of medicine, not as applied to our treatment of each other, but as pertaining to our relations to the community at large, in principles and in obligations, from which, as workers in medicine,—whether in the laboratory or at the bedside—we can never worthily escape. For, unlike the worker in other fields, the facts of our calling deal with human life and happiness. We are present at birth and at death. And in the brief interval of light between these two darknesses, the destiny of men and women may often be determined by the wisdom with which we may serve them or the ignorance and carelessness by which we may fail. Whether we deal with experiment, with practice or with public health, the intelligence, sincerity and zeal with which we perform our tasks finds its reflection, immediate or remote, in terms of happiness or sorrow. This, indeed, is not an ordinary profession—nor can it be made into one. We may adapt the methods of its pursuit to the inadequacy of our wisdom—to the weaknesses of our spirits. But the task itself remains a noble one that cannot be ignobly done without essential failure.

I do not wish to preach a sermon—nor to indulge myself in lofty sentiments that may be laid aside in the camphor balls of disuse until the next medical sabbath. But *this* is the premise from which I wish to discuss a variety of the problems that confront us: that medicine more than ever before is a career of public responsibility—in all its branches. The power for good of the knowledge available for us is balanced by the dangers of our ignorance; the confidence of our fellows, which enables us to console, endows us with extraordinary power to deceive. The work we do infiltrates with its influence the destinies of individuals, families, communities and nations. These and many other things limit our freedom of action as private individuals. There is, strictly speaking, no such thing as "private practice"; the physician, whether he acknowledges it or not, is, by the nature of his work, a public servant. To be effective he must develop a type of practical philosophy of work—a sensible idealism which, without expecting the impossible of his own frail humanity—or that of others—will keep before him the true purposes of his profession. To avoid cant, let us call it ethical common sense.

THE NEEDS OF THE STUDENT AND THE SCHOOLS

While much more than mere knowledge is required to constitute greatness in any branch of medicine, our calling is preëminently the one in which ignorance is a positive and not a mere negative failing, and omission from lack of information is as serious and blameworthy as faulty interference. Knowledge, therefore, is the keystone without which other talents and virtues are vain, and in training young men and women to the responsibilities which we have emphasized it is not enough to supply them only with the static knowledge of the present, but it is of still greater importance to so cultivate and prepare their minds that medical progress may find them ready to profit by its new deductions.

The very developments which I have enumerated have made of medicine a complex structure of coöperations. It is a great tree of many branches, which takes its roots in the basic sciences and spreads into innumerable arms of specialization. To keep it green and growing the sap must be kept running from the roots to the leaves, and this can be accomplished only by the constant coördination of activities that in method, material and the very nature of the talents demanded would seem utterly unrelated. It has been the efforts of the modern medical school to strengthen and maintain these coördinations which have caused it to be so often misunderstood and criticised by many of the practicing profession and the laity—still more than this, by many of its students, whose impatience with the laborious laboratory years proceeds from their desire to be practical men. They do not know the definition, to use Whitehead's quotation, that a practical man is one who "practices the errors of his forefathers." They are right that a shorter period of study, a more direct approach to the management of the sick, a more intensive training in the mechanics of their profession would make them more effective for immediate practice. They do not know, however, how shortlived this effectiveness would be, how soon they would be swept aside into an obscure eddy while the central stream of medical progress, new methods, new deductions, useful and comprehensible only to the mind armed with the necessary basic premises, would pass them by. The reproach that the tendency of medical education is to make investigators and scientists of all our students is not only unmerited, but describes an impossible ideal. Would that we could approach it more closely in the four short years which alone, in a physician's lifetime, are devoted to the principles underlying all the further studies of his practical existence. Could we for these brief years establish such a standard, we might perhaps delay the development of the art and manual skill in certain individuals; we could not injure it in those so talented—and what physicians and surgeons we could develop! The more closely we can approach to this ideal, the more likely we will be to send to the bedside and the clinic men and women whose conclusions and the actions based upon these will be the results of logical processes and not mere formularized reflexes. For the eyes and the ears and the fingers can perceive, but they cannot think. And the four years are all too short for the inculcation of the necessary facts and the development of that intellectual self-control without which much that the senses perceive will fall upon sterile soil. We must build foundations deep into the minds and characters to bear the ever increasing strain of that most difficult of all scientific endeavours, the accurate observation of the sick.

Thus, the apparently exaggerated emphasis upon the fundamental facts of the contributing sciences is nothing more than a plan to give to our own generation of physicians an equipment for thought and action equivalent, for our times, to that possessed, for their respective eras, by the great physicians of the past. Confucius says: "Love of humanity without knowledge leads to confusion; love of science without knowledge leads to perplexity."

In education the experimental method must displace the purely didactic statement of traditional doctrine—the loose exposition of personal opinion. Since a growing number of the things that constitute the materials of our equipment are amenable to proof, it is our business to demonstrate or expound the nature of the proof, and let the student draw his own conclusions from his own observations. This takes time and preliminary training in the premises and methods of the sciences that furnish the proof. After this the technique of medicine can be taught and not before. To carry out such a plan of teaching will become increasingly difficult with the growing complexity of medicine, but it can be done with occasional adjustments. Without it no degree of brilliancy or natural endowment will avail. And, indeed, one can think of few things more dangerous to the public—except perhaps an automobile on Sunday—than brilliancy without judgment in physicians and especially surgeons.

The need for such fundamental training has of necessity exerted a profound influence upon the organization of our schools. And while many of the actual changes of method and performance are probably familiar to most of you, I may be permitted to dwell briefly upon the more important principles underlying these modifications—principles upon the maintenance of which depend, in my opinion, eventual and continued effectiveness.

A generation ago the sciences were spreading fanwise in the pursuit of specialistic details. Today they are flowing together into a central current of astonishing community of basic premises. Discoveries in one field correct and modify the conception of another; and in the complete comprehension of the simplest natural phenomena, the facts of all methods participate. Thus, whether our work concerns the reactions of elements, of forces, or of living things no spark of truth that is struck can fail to throw its beam of light upon its fellow sciences. And, in medicine, to achieve the coördination of effort which I have mentioned above it has become necessary constantly to tap the information and personnel of the basic sciences, drawing into our schools more and more as time goes on men of other trainings, who will approach the great, complex mass of uncoördinated observations with a fresher and simpler view. If there is any one thing more striking than another in the organization of a modern hospital, medical school or research department it is the constantly growing number of pure chemists, physicists, biologists and now mathematicians, sociologists and psychologists, who have become indispensable members of its groups.

In our best schools, in addition to the endeavour to coördinate the various sciences in the attack upon medical problems, there has developed, within the last twenty years, a consistent policy of generosity in regard to equipment and the encouragement of original effort. Appointments are being made as nearly as possible on the basis of scientific imagination; and work is so organized that independence and reasonable leisure for investigation is provided even for the youngest of the staff. And to those who would object that this may be to the detriment of teaching, I will reply that no teacher is so uninspiring as he who, like Kipling's Tomlinson, draws all his information from the things he has heard and read—or from the scientific experiences of other men, which is the same thing. The great leaders of medicine have entered the unknown ranges and seas of science with the same spirit of adventurous imagination with which explorers crossed the oceans or entered new continents, and it is the emulation of this spirit which characterized those teachers who inspire us to our best efforts and whom we hold in grateful memory.

The splendid opportunity of the modern medical school should consist, to a large extent, in the fact that no student is taught by instructors who are not engaged in endeavours of inquiry in the subjects which they teach, and no investigator is entirely deprived of the stimulating contact with the fresh minds of eager and well-prepared students.

The deplorable condition, formerly so prevalent, that men of scientific enthusiasm and talent were discouraged by lack of equipment and the crushing weight of routine duties in the departments of medical schools, is being rapidly removed. And men of this type can find, not only in the laboratories but also in many of the clinics, at least the same opportunities for study and investigation offered in other scientific departments of the Universities. We must encourage this and prevent reaction against it on the part of those whose inadequate imaginations fail to grasp the profound influence of the atmosphere of eager inquiry upon the minds of beginners, and whose lack of vision ignores the inevitable, though perhaps remote, practical significance of a basic truth, however abstruse. There will be men in the departments of such schools whose inclinations and talents will emphasize teaching or the practical contacts of their subjects; others will dig deep into ultimate causes; others, again, will wander into neighbouring fields. All but a rare and precious few should have some contact with students. All, without exception, should have a not too parsimonious share of that leisure for contemplation in which ideas may ripen.

Best of all, there is this growing understanding of the necessity for the contemplative leisure in which ideas may ripen.. For let us not forget that Archimedes discovered specific gravity in the bath tub; Descartes conceived coördinate geometry while lying in bed; the force which moves our freight and has eliminated distances was deduced from the contemplation of a teapot; and the presence of Isaac Newton in the apple orchard, perhaps in lonely meditation, altered the course of physical theories. These are extreme examples and conscious use of the precious leisure in similar pursuits is not likely to yield comparable results. But adherence to the principles I have endeavoured to outline will be most likely to yield results in increased knowledge, will favour the development of the necessary few who will take up our problems where we drop them, and will give to the many who pass on to the practical pursuits of medicine that spirit of enthusiasm for truth, that capacity for the critical appraisal of evidence which is as necessary at the bedside as in the animal room and the laboratory.

THE PHYSICIAN AND THE PUBLIC HEALTH

It is in the activities of preventive medicine that our profession and the public have begun most thoroughly to understand each other. It is not only that we have recognized the impossibility of accomplishing lasting results without public confidence, but that the intelligent public is making amazing progress in sound comprehension of the principles underlying protective measures, and has learned that these activities are not exclusively the responsibilities of medicine. That this had long been recognized as a principle is apparent from the history of public health legislation. The Peel Act—designed to "protect the health and morals of cotton spinners" was passed in 1802 and was followed by the British "Public Health Act" in 1848—the Lodging House Acts of 1851—the Nuisance Removal Act of 1855—these and other evidences of awakening public conscience leading rapidly to the establishment of government departments of health. Thus, it has long been apparent that in problems in which the medical aspects are intimately interlaced with economic, sociological, educational, industrial and occasionally even religious considerations, the public itself must eventually take the decisive actions—the medical profession merely setting the compass. Yet it has only been during recent years that public education has sufficiently progressed to permit this conviction to penetrate beyond specially informed classes.

It is probably safe to say that the civilization of a nation can be measured with fair accuracy by its public health statistics in times of peace; not because of differences in medical and sanitary knowledge, which is international, but because such figures gauge the humanitarian impulses and the intelligence with which the people as a body insist upon the rational utilization of such knowledge. It is not an uncommon experience, and it has been my own pleasant lot, to encounter in difficult situations involving the public health a breadth of judgment among the laity of all classes in subordinating their own personal comforts and feelings to the welfare of the community far superior to that displayed a generation ago by even the learned classes. I would like to cite as a recent example the magnificent public spirit of the parents of the children that suffered from the results of the accidental freezing of the toxin-antitoxin mixtures used to immunize them in Concord. The public spirit and intelligence displayed by them regarding matters of which they had no technical knowledge was incomparably superior to that of those well-meaning but still dangerous enemies of public welfare who had given special study to these problems without profiting thereby. Such observations, together with the constant extension of public health information, encourage me to believe that the future development of this work and the gradual removal of stupid obstructions can well be left to the people themselves.

This does not, however, relieve the mdical profession of responsibility. While the coöperation of chemists, engineers, entomologists, statisticians, economists, architects and administrators is indispensable—and although such specialists must inevitably tak-e the lead in certain phases of the work, yet the underlying principles upon which the structure rests are medical, and the central body of workers who give direction, define objectives and furnish information to the specialists must be medically trained. Moreover, the responsibilities of individual practitioners is enhanced rather than diminished by these developments. For the physician represents the first line of defense. He is the first to see and recognize the early sparks of epidemic; it is often in his power to quench them, always his duty to take the first steps toward limitation. No practicing physician can avoid the obligation of being, in this sense, a public health officer—morally as responsible to the community as to the individual patient, and in recognition of this it is the intention of several of the leading medical schools of this country to infiltrate their teaching with public health information in such a manner that no course is taught, no specialty considered without inclusion of the preventive information pertinent to each subject. If this can be properly accomplished no physician will see a case of any kind without bearing in mind that his duty will be incompletely performed unless he adds to his care of the case all those precautions and procedures in which, by virtue of his strategic position, he represents the interests of the community. Moreover, by the authoritative position which he occupies in advising them as to the regulation of their daily lives he constitutes perhaps the most important single influence in the difficult and delicate problems of public health education.

In connection with the more obvious functions of the physician as a health officer, as they apply to the reportable diseases, considerable efficiency has already been attained. There are many other problems, however, notably those associated with the control of venereal diseases, in which the great difficulties opposed to the legisative administration of measures of control throws the responsibility almost entirely upon the medical profession. And in such matters it is only the development of a high-minded, conscientious and sympathetic attitude on the part of those in contact with the sources of infection that can exert any material check upon the rate of incidence. Indeed, there are problems in the delicate relations of human beings to one another, in those dim border-lands between the dominions of the body and the mind, which are of the utmost importance to the community—its physical and its mental health, which are so subtle and difficult of approach that no organized department of prevention, no specialty of our calling, can reach them. In these things we must always rely upon the professional conscience of the individual physician, hoping that pity and understanding may ripen in him some measure of that democracy of the heart and aristocracy of the mind which makes great gentlemen and great physicians.

MEDICINE AND LEGISLATION

Since the facts which stimulate the promulgation of health legislation are, to a considerable extent, contributed by medicine and its tributary sciences, it is obviously a part of our public duty to aid in so formulating these laws that they may utilize with as little delay as possible the practical harvests of scientific discovery; that they may avoid ever being based upon uncertainties of fact; that they may never outstrip public education by a distance which may render them futile; and, finally, that the rigidity of their requirements may be commensurate to the importance of the perils to be met by them.

The desirability of enforcing any measure which is sure to diminish disease, suffering and degradation is always beyond question. And in such matters as the protection of water supplies, the sanitary production and distribution of food, housing, school hygiene, the protection of minors, the safeguarding of workers against health risks in the occupations necessary for support; in these and many things like them the physician's opportunities of assisting the state in carrying out its functions are obvious. But there are a great many other problems in public health legislation in which the enthusiasm engendered in the humane and sympathetic mind for the relief of physical suffering must be tempered by the recognition that most health legislation calls for the exercise of individual self-control and for frequent subordination of personal comfort to community interests. For this reason popular recognition of the necessity and wisdom of the measure is of the greatest importance. Moreover, many laws of this kind involve some interference with the principle of personal liberty, without the maintenance of which something degenerates in nations which, in the evolution of true civilization, is quite as important as bodily health.

The desirability of remembering this in connection with public health legislation was recognized long ago by John Stuart Mill, and more recently by Lecky as "the danger of injuring one principle by strengthening another." In the enforcement of both active public health measures and the desirable abstinences a fine balance must, therefore, be struck and a delicate sense of proportion applied. Without this we will defeat our own ends and stimulate harmful reactions which eventually lead to complete evasion.

More than twenty years ago thoretically effective laws were passed in many states, aimed at the elimination of tuberculous cattle from herds. Attempts to enforce them ruined a number of farmers and the laws fell into utter disregard. Modifications which include consideration of the economic factors are now beginning to produce the desired results. The British have gone to lengths of taking considerable risks—more than I would advocate—in the "conscience clause" to the vaccination law, and in their reluctance to proceed to the universal compulsion of typhoid vaccination, even in the face of war. Such breadth of mind may be extremely dangerous, though in the two infections mentioned, the persuasive influence of timely epidemics is a powerful ally of the sanitarian. In most questions of this nature the decision is a much more difficult one and the just, sensible, and, therefore, eventually effective judgment, can be attained only with the assistance of the expert evaluation which our profession can supply.

When legislation is concerned with the protection of the healthy against acute infection from the diseased, the situation appeals so directly to the instincts of self-preservation, and the onus of compliance is so distinctly upon the sick, that no difficulties arise. When means of prophylaxis are simple, their effectiveness clearly established to all but a mediaeval minority, and the opportunities for compliance freely supplied—as in smallpox—this, coupled with the usually prompt penalties of neglect, removes all questions concerning the propriety and soundness of compulsion. There are a few diseases —notably diphtheria—in which the knowledge basic to prevention has progressed so far that eradication by compulsory methods would probably be possible, but in which the method of educational propaganda, provision of opportunity for the measures indicated and complete frankness, in success and failure, toward the public is bringing results without compulsion. To the thoughtful observer the apparently undiminished demand on the part of parents for the continuance of the immunization of school children during the difficulties of last year, and this in spite of the pernicious use made of the situation by opponents of the method, demonstrated how thoroughly reason and honesty of purpose have begun to establish relations of confidence between the public and our profession. And in speaking to audiences of working-men, parents-teachers associations, and other lay bodies, and noting the nature of the questions asked and the degree to which the simple exposition of scientific facts has begun to influence popular opinion, I have become inclined to believe that with a few exceptions most of our purposes can be achieved without compulsory legislation in ordinary times, when neither existing epidemic nor war have introduced abnormal factors into the decisions.

There is still another type, and a tragic one, of human misery in which we are prevented from taking a purely sanitary point of view by the involvement in its problems of questions of public morals and the conflict of the interests of public health with the confidential relations between physician and patient. This latter consideration is of great public health significance in that it encourages the sick to seek advice and thus uncovers sources of spread. There is little question but that we could immensely reduce the incidence of venereal disease could we institute compulsory segregation of the recently infected, write restrictive paragraphs into our marriage laws (a thing that has been tried with doubtful success), and freely broadcast the considerable information we possess concerning prophylaxis. It is a matter of grave question, however, whether by doing these things we would make more headway than we are now making by campaigns of education, by attacking underlying sociological causes, by increasing the ease of access to opportunities for diagnosis and treatment—and leaving the rest to the sense of public responsibility of the individual physician.

These questions are as immensely difficult as they are grave. In few of them is there a sharp line of differentiation between the desirable enforcement of the public interests and the dangerous infringement of personal liberty. We know that compulsory smallpox vaccination is right, and we also know that it is quite out of the question to forcibly remove the gallbladder from all typhoid carriers or incarcerate all persons with an open tuberculosis. No generalization of principle is possible and, however conscientiously formulated, a certain degree of arbitrariness cannot be avoided. And in every individual decision the wisdom of the arbitrary line that is drawn must in the end depend upon the soundness of judgment and conscientiousness with which the medical facts are by us interpreted to the people and their legislators.

On the one hand, we must check those who are fanatical for compulsory legislation, who, if we can imagine them completely successful, would make it harder to die but infinitely more desirable to do so, until mankind, like Fenelon's Calypso, may cry out bewailing its immortality. On the other hand, we must lose no opportunity to push the possibilities of preventive legislation to the very limits of the feasible and the sensible.

After these various examples I feel confident that those who suspected me of having in mind the 18th amendment, when I used the words "personal liberty," have given me credit for a broader motive. But it seems not out of place to suggest a possible "conscience clause" for this example of health legislation, exempting those with conscientious scruples, and to express, in passing, my admiration for the analogue of this law as I found it among the Russians—a nation not otherwise noted for legislative wisdom. In Russia one can buy a variety of things; but drunkenness is a penal offence without appeal.

THE CULTS

In considering health legislation and our interpretive duties to the public, it has occurred to me to allude briefly to a subject which is too often left to chance discussion and flippantly dismissed in spite of the fact that its importance for the safety of the public and the proper development of state supervision is a considerable one. Osteopathy and Christian Science are already quite firmly entrenched among us and no one interested in the safe-guarding of the public health could have read the recent vigorous campaign for official recognition by the chiropractic school without misgivings. These things must be met by us without irritation and logically, so that we may not lose, by a perhaps justifiable vehemence of reaction, a public confidence that could easily be won by calm willingness to employ reason even against the unreasonable.

I had a friend—a mathematician and physicist of some ability—who was cured of insomnia and apprehensions by Christian Science. An eminent philologist showed me a fat son recently whose spinal nerve roots had been pushed somewhere or other by an osteopath. They were very little use to society before. They not only do some work at present, but are the prides of their respective families and play golf. Both of them had tried us before without relief. There are otherwise rational people who believe that if we could get our minds off the diphtheria bacillus it would stop producing toxin—that a tubercle bacillus can be discouraged, an early cancerous growth checked, or a faulty metabolism corrected if one can but push hard enough on the proper vertebra. We no longer believe that red flannel cures colic, that ear-rings prevent pink eye or that a snake skin around the ankle preserves the swimmer from cramps, any more than we have faith that we will catch more fish by expectorating on the bait. But when the rational methods of approach do not solve problems, do not bring succour, human beings, in their distress, grasp at the straws of any hope that is offered, however absurd. But let us not forget that none of these therapeutic cults would last more than a few years were it not for two things—one that there is still a great deal of empiricism and not a little that is absurd in the ordinary practice of our own profession (to say nothing of conscious insincerity), the other that these faith cures and layings on of hands sometimes succeed where we fail. May I quote a shrewd paragraph taken from the report of a commission appointed by the French government to investigate the claims of mesmerism, and written by its leader, one of our wisest Americans, Benjamin Franklin: "There are so many diseases which cure themselves, and such a disposition in mankind to deceive themselves and one another on these occasions, and living long has given me so frequent opportunities of seeing certain remedies cried up as curing everything and yet soon after totally laid aside as useless, I cannot but fear that the expectation of great advantage from this new method of treating diseases will prove a delusion. That delusion may, however, be of some use while it lasts. There are in every great city a number of persons that are never in health, because they are fond of medicines and always taking them, whereby they derange their natural functions and hurt their constitutions. If these people can be persuaded to forbear their drugs, in expectation of being cured by only the physician's fingers or an iron rod pointing at them, they may possibly find good effects though they mistake the cause." That this is wise and just and tolerant in regard to the cults is apparent—but it may be painfully described as "hitting the nail on the thumb" when we stop to think how aptly it is also applicable to occasional claims in the legitimate medical literature.

The ghost of P. T. Barnum is still abroad among us even in our inner circles and, while to the irritable mind his own age will always seem to be the particular golden age of humbug, the sum total in the world is probably not very variable—and, as in the case of matter and energy, we may speak of the law of the indestructibility of humbug. Only in our day, instead of incantation, witchcraft, evil eye or brass rings, it becomes electron therapy, vibration, etc., etc. But in every age its jargon, its mechanism and its methods are taken from the borderland of medicine itself, in those regions of underbrush in which we ourselves are gropingly exploring. We must look the facts in the face. The sorrows and disappointments that have followed in the wakes of wrecked cures for cancer and tuberculosis are about equally divided by us and by the cults. Both against the errors and insincerities within our own ranks as against those less sincerely committed by the cults, we are the only protection of the public. And the public must be taught that there are no different "schools" of medicine any more than there are different "schools" of physics, chemistry or mathematics. It must be taught that if an osteopath or a chiropractor, a faith-healer or even a Congressman could prove a great or a little truth, basic, theoretical or practical, which could be substantiated by the experimental or even the purely empirical method—or even if he could only bring enough sincere evidence to throw doubt upon or overturn an accepted conception—his would be honour and acclaim equal to that of the most learned professor of our calling. For the protection of mankind, however, we must insist upon rational proof or at least acceptable evidence. Could this be advanced no medical school would fail to have a chair of osteopathy or what-not—as now it has biochemists, physiologists, pathologists and anatomists, and is adding biomathematicans, physicists, and others in the future—as their power to coöperate has become indispensable. Meanwhile we must keep our minds open, appraise whatever is advanced and, before utterly condemning, make sure that there is not, within the rank and wild growth of the new weed, a sound twig which might have been of some value if properly pruned. For it is probably not coincidence that the newer psychology of medicine developed the more rapidly for the existence of Christian Science and the energetic interest in mechano-therapy may well have been accelerated by the various bone-shoving sciences. However, it should not be too difficult by methods of reason to convince our fellows that the presence of a small kernel of nourishment does not make it safe to swallow a whole artichoke. Meanwhile, may we also vigilantly, and much less tolerantly, keep our own door-yards swept.

POSSIBILITIES

I have spoken at length of the various interlockings of medicine with other community activities for the relief of sorrow and suffering, and for the achievement of a higher civilization by the removal of the unnecessary cruelties of existence. For this—in a nutshell—is, after all, the inner purpose of all our labors and strivings—an unnecessary cruelty being one that we can remove by unsparing and unselfish labor in the application of the knowledge we possess. I can do no better to make myself clear than to trace out for you the development of such coöperation in one disease in which it has been highly developed—tuberculosis.

There are so many details which can be considered in connection with every one of the phases of the tuberculosis question with which I will deal that, in order not to needlessly prolong this exposition, I must confine myself to a very brief outline. For this reason I will not attempt to define the magnitude of the tuberculosis problem further than by stating that in 1894 in Germany, while there were only 116,705 deaths from all other infectious diseases, there were 123,904 attributable to tuberculosis. In 1888 there were 326 per thousand deaths from tuberculosis in the United States. Calculate this into the total population and it will give you a fair conception of what the problem means to the world, especially if you add to these considerations the fact that economic and other conditions are probably better in the two countries mentioned as regards disease than in any other parts of the world, with the exception of perhaps England and its agricultural colonies.

The great humanitarian structure of the fight against tuberculosis is built entirely upon the observations made by a French physician, Villemin in 1865 and by Koch in 1882, whose investigations made the infectious nature of tuberculosis an established fact and made it possible for us to apply scientific reasoning to all the problems concerned with its infection of man. Villemin not only transmitted the disease to animals, but noticed at that time the differences in virulence between the human and the bovine bacillus which has been the basis of the differentiation of these two types ever since. Koch not only revealed the bacillus but, by passing it through animals and recovering it from the lesions so produced, removed all possibility of further doubt concerning its relationship to the disease.

If I may be permitted to digress for a moment to a subject I had meant to allude to in considering the medical cults, may I ask you, when you have surveyed with me the activities that have been coördinated for the fight against this disease and the results that have been shown in terms of human life and happiness, to remember that the basis on which it all rests is one of animal experimentation. It is our gentle laboratory companions, the guinea pig, the rabbit, the monkey, who have aided us in revealing the cause of tuberculosis, its manner of progression, its paths of entry into the body and its distribution from the lymphatics to the upper respiratory and intestinal canals; they are aiding us daily in determining tuberculosis of infected milk; in the clearing up of diagnosis of doubtful cases; in the establishment of the importance of pleurisy with effusion; in the development of our knowledge concerning the diagnostic value and significance of the tuberculin reaction; and are indispensable in the further study of resistance against the disease and the possibilities of eventual specific prophylaxis and cure. Reasoning of this nature can be carried out in the case of the majority of the infectious diseases which we are trying to combat, and it is important for the general public to think along these lines to some extent, since we are constantly forced to carry on a skirmish in our rear against the antivaccinationists, antivivisectionists, in short—collectively—the anti-rationalists, who never grow weary of sniping at the sanitary trains of progress—fortunately with the muzzle-loading arquebuses of another age. There would seem to most of us very little choice between the conscientiously controlled animal experimentation and its minimum of cruelty and the incalculable cruelty to men of eliminating the possibilities of a progress which, in this disease alone, in its ultimate effects, has saved hundreds of thousands of lives, a figure which may be raised to the nth degree of power, should we dream of expressing it in terms of anguish relieved.

To return to tuberculosis, let us first consider the coöperation necessary in the attack upon this disease within the realm of medical activities. The most important of these is an early diagnosis. Since the large majority of cases cannot be seen by a specialist, this matter takes deep root in the education, not so much of the medical student as of the hospital interne and the young physician in the clinic. It includes training in the history of cases, in the direct interpretaton of early physical signs, in the simple bacteriology of sputum examinations, and the necessary coöperation of the X-ray, which again requires a high degree of specialistic ability and must be organized so as to be available when needed. It requires education in the significance of complications such as the pleurisies, which Brown calls the fifth of the cardinal data of diagnosis, and in which much of the pioneer work was done at this hospital by the Bowditches, Garland and Cabot. It requires practical and theoretical knowledge of the significance and interpretation of the tuberculin reaction and, most difficult of all, judgment in the differentiation of latency and activity. It also calls for familiarity on the part of the examining physician with the entire structure of the anti-tuberculosis campaign, so that he may so dispose of his cases that they can be properly guided towards future opportunities for care.

Thus, primary to a successful campaign, is the task of proper education of the practicing physician, and to make this education effective the facilities for diagnosis and the uncovering of new cases must be organized. This leads to the necessary establishment of a sufficient number of properly equipped special clinics and diagnostic centres, organizations which can be provided only by enlightened appreciation of the problem by municipalities and states, and expert guidance in the legislative programme which, again, ramifies into the fields of law and government.

Connected with such clinics, as a most necessary development, also, one of the great contributions to medicine initiated by this hospital, there is required the extension of social service and the follow-up work on cases by nurses; for, just as the development of modern surgery would have been next to impossible without the coördinate development of expert nursing, so in public health work it is now a well recognized and indispensable factor for success. It is an important forward step in the development of public health that, last year, a school for the broader aspects of nursing became an integral part of the medical activities of Yale University. Not only do such nurses uncover hidden foci of infection, but nurses' conferences and tuberculosis classes among the laity have brought out many useful practical facts, and in no other manner can a more thorough infiltration of education in personal hygiene and the simple principles of care be accomplished.

Thus carrying the medical supervision into the home, the Home-hospital experiment developed,—one of the most humanitarian undertakings of the entire campaign against the disease, since one of its important features has been the keeping together of families and the development through it of greater stress upon the factors of housing and economic conditions. As Burritt has expressed it, this experiment has developed as its main objectives "a decently constructed home, a decent budget for the provision of adequate nourishment and the development of medical and nursing observation without undue expense." It has spread knowledge of the importance of cleanliness, and the care and choice of food, correct diet and the utilization of roofs and open spaces as sleeping quarters. Indirectly, as the reports of the New York Commissions indicate, it has led to increase of earning powers of the family, and if we may borrow a metaphor that is usually used for the opposite condition, has led thus to the establishment of a beneficent circle where there existed before a vicious one.

As the municipal responsibilities have become more apparent, there followed recognition of the importance of hygienic conditions; increased attention to cleanliness of streets and places of amusement; supervision of food handlers and in the organization of eating places. The provision of baths, tenement house inspection, factory and shop supervision and attention to working hours and the problem of fatigue; all of which play important roles in the prevention of this, as of some other diseases. Behind all this has grown the attempt to provide sanatoria and hospitals, but these would soon be overfilled and hopelessly inadequate were there not at the same time economic coöperation in the provision of occupation for self-supporting cases, and vocational training, which may make it impossible for mild or arrested cases to return to lives of usefulness and happiness instead of becoming public charges.

No coöperative activity strikes at the root of the matter, however, so fundamentally as does the development of school hygiene and all that goes with it; no educational movement is quite as important as that which instructs the children that come from the homes of all classes in personal hygiene, and who carry this knowledge broadcast into the homes; no agency attacks so directly the problem of the early case as that which deals with children from these homes. According to Chadwick, 8 to 10% of underweight children are tuberculous in some form, and without being unduly optimistic, it is quite sure that a considerable percentage of these children, that might otherwise go on to more serious illness, can be saved. Incidentally, the constant necessity of unrelaxed educational activity in this question is illustrated by the strenuous opposition that is again and again asserting itself against so obviously desirable a matter as the periodic physical examination of school children. It is not longer than a week ago, according to newspaper reports, that in Chicago, the stripping of children in the schools for physical examination was held unjustifiable.

Closely associated with this problem is the establishing of open air schools and of summer camps, both of which have called upon coöperation from innumerable enlightened agencies of the community, and following the attention to children of school age has come the tracing of the problem to its sources in attention to maternal aid and education, and by the organization mothers' clubs, which eventually may prevent the tuberculosis now entering our schools. For while actual hereditary transmission of tuberculosis does not take place, children are extremely susceptible and may easily be infected by intimate association with members of their own families during the earlier years.

And although we have already touched upon almost all the activities of a community in our outline of the campaign against tuberculosis, there are still others, most important among which is the nutritional problem. This concerns not only those questions of hygienic education which deal with the choice of food and the balance of diets, not only the intricate economic problems of the poverty which leads to malnutrition, but, in addition to this, direct attention to infected food. It is this question which has completely revolutionized the dairy industry and all its ramifications. While bovine tubercle bacilli have a relatively low infection for the adult human being, we know from pains-taking and difficult studies that about a third of the cases of tuberculosis in children under five are bovine in origin; a small but still important percentage of tuberculosis up to 16 springs from a similar source. We also know that about 10 to 25% of the cattle killed for food purposes have been found to be tuberculous, and, according to a recent statement made by Sumner Coolidge, of the Lakeville Sanatorium, in 1922 there were not enough "dairy cows in New England known to be free from tuberculin infection to replace the reactors (the tuberculous ones) and maintain the required milk supply, if all the reactors should be slaughtered at once."

This problem alone has necessitated extensive laboratory and field studies upon the significance of the tuberculin reaction in cattle, and in developing the most reliable method of determining the presence of tubercle bacilli in milk. It has stimulated the most elaborate kind of experiments in cattle breeding and dairy management such as the Bang Plan for the building up of healthy herds by beginning with the calves of tested cattle, quarantined and fed on pasteurized milk. It has necessitated legislation which affects not only the commercial aspects of wholesale and retail distribution of milk, its classification and manner of sale, but involves important economic questions of agricultural management.

Architecture and the economics of housing, intricately interwoven with all of the problems that arise from poverty, have been drawn into the plan and elaborately studied. In 1903 Biggs made the statement that in the overcrowded districts of New York tuberculosis mortality was more than three times that observed in other districts. In 1919 Younger, who studied conditions in Glasgow and Edinboro, showed that in the former city more than 55.7% of the population lived more than two in a room; 27.19 more than three in a room, and 14.1 more than four or five in a room. The figures he gives of the frequency of contacts of the healthy with the tuberculous under such conditions are appalling. In the house of one, two and three apartments (I am quoting Vaughn) there were 2852 children and 6543 adults living in regular contact with 2275 persons suffering from tuberculosis. In a similar report in October, 1916, he states that in Edinboro for the years 1911 to 1915, while 112 children under five died in the better class wards, no less than 797 died in one of the thickly congested wards, and in these two wards the deaths of children under five from tuberculosis numbered, respectively, 12 and 64. Vaughn correctly states that it is not necessary to go to Europe or New York or any other great city to find evidence of unsanitary housing, and perhaps that it might truthfully be said that, in most villages and even in isolated farm houses, tuberculosis is largely a matter of housing.

Necessarily these considerations lead into the still larger coöperative problems of city planning and the relationship of this disease to the percentage of space given to public gardens and playgrounds in the larger cities, a question which has been especially studied by Gruber and other European sanitarians, and this problem is one of the most important considerations confronting those who, like the present Sage Foundation Committee in New York, are concerning themselves with the formulation of plans for the development of new quarters of old cities and the reconstruction of existing districts.

Finally, the coöperation of mathematicians and statisticians is necessary to keep us informed of the successes or failures of our methods, and by other analytical studies to eliminate the useless and emphasize the important.

It is hardly necessary to question ourselves whether all this enormous mobilization of earnest effort and technical knowledge in practically all of the branches of human activity is worth while. A few figures can convince the most pessimistic. In the United States the death rate from tuberculosis has been reduced from 326 per hundred thousand in 1888 to 147.6 in 1914, which means that at the old figures the number of people dead from this disease would have been 320,027 in 1914, instead of 14,300—which means a saving of over 179,000 lives.

And further to emphasize the fact that such results are dependent upon the proper functioning of all the different branches which work together, it suffices to show, again with a very few calculations, that in spite of the maintenance of purely medical knowledge, the entire structure becomes futile when abnormal conditions of war and poverty ensue. Thus the death rate from tuberculosis in Berlin increased 52% between 1913 and 1918, while in Vienna it increased during the same period by 65.7%, and in Budapest by 78%.

Thus, if I have made myself clear, I have shown you that the battle against a single disease, with strategy prescribed and objectives defined by medical discovery, enlists all the agencies of intelligence, skill and benevolence of a community. It unites in a single splendid purpose all those who are capable of raising their eyes above the daily pursuits of their own selfish aims. With a unanimity of purpose that characterizes no other human activity it appeals to the idealism and altruism of all professions and all classes of men. It influences and humanizes the conduct of the home, the school, the workshop, the factory and of governments. For in the face of the catastrophe of disease, if in no other way, all men are equal; and with the stripping of the afflicted body—nothing is left but bare humanity.

And what has been done with tuberculosis can be accomplished more easily with other maladies. Yellow fever is all but conquered. In diphtheria we have the facts and methods that should eliminate it within a generation. Syphilis, scarlet fever and measles are yielding. In these and many other afflictions of man we know the facts of transmission, the means of prevention. And can there be a greater adventure, a more sublime appeal to the imagination than to spend one's self in the conquest of disease, with labor and risk and devotion such as the dragons of old, the crusades, the reformations or the discovery of continents never offered.

And so the burden of my discourse has been that he who engages in the pursuits of medicine becomes thereby a public servant. The nature of his work has forged his chains. It deals with much more than the mere physical care of the sick. The threads of his activities run deep into the web of human life in all its phases. Each fact that is added to his equipment increases his obligation—for it may enhance his power to ease a pain or prevent a sorrow. The understanding he possesses permits him to foresee and prevent suffering and calamity to the individual and the community. He cannot withhold knowledge that may be of benefit—he cannot permit ignorance or prejudice to obstruct the things he knows to be right. It is his lot to interpret and persuade. The wisdom he may possess should make him tolerant; his pity should keep him human; and the consciousness of his inadequacy should give him the humility which every rational mind must feel in the face of such a task. For although a small part is known of the bodies and the hearts of men with which he deals, much more is still inscrutably concealed and the end of his labors will never be entirely achieved. And he must always feel with Isaac Newton—"like a little child that has been picking up a few pebbles on the shore of the great ocean of undiscovered truth."

CONCERNING THE SIGNS AND SYMPTOMS IN EARLY TUBERCULOSIS

BY MOSES J. STONE, M. D. AND MARK H. JORESS, M. D.

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TWENTY-FIVE YEARS have passed since the first organized attempt was made to fight tuberculosis. Various methods of approaching the problem were undertaken. Early diagnosis was the thing then most emphasized. We were truly rewarded as shown by the statistics of a lowering of the mortality from 179.8 per 100,000 in 1910 to 80.5 per 100,000 in 1923, surely a great accomplishment. Of late, however, the early diagnosis as well as the early treatment of pulmonary tuberculosis has not received the attention it merits.

In Rutland, where we admit the greatest number of early cases of any other state sanatoria, we find that the number of early cases admitted is only 20 per cent of all admissions, that is, 80 per cent of the cases are moderately advanced or far advanced. The physician either does not see the patient when the disease is in its early form, or is reluctant about sending him to a sanatorium when the disease is in its early manifestations. The diagnosis of early tuberculosis is often difficult. However, when the early signs and symptoms are carefully considered, a diagnosis can be arrived at in the majority of instances.

In connection with the study of tuberculosis, writers on the subject, notably, Dr. Lawrason Brown of Saranac Lake, have evolved schemes for diagnosis. These have been designated as "cardinal signs and symptoms." They are: (1) tubercle bacilli in the sputum and feces; (2) pleurisy with effusion; (3) hemoptysis; (4) moderately coarse rales; and (5) a parenchymatous roentgen ray lesion above the second rib and third vertebral spine. Too many of us look for moist rales, positive X Ray findings, and positive sputum before we are willing to diagnose early tuberculosis. We should not be satisfied with a single negative laboratory report; the mere fact that tubercle bacilli are not found does not prove their absence. In Rutland only 75 per cent to 80 per cent of all admissions, including second and third stage cases, show a positive sputum. Going over the records of the past 3 years, we find that only 30 per cent of the minimal cases had a positive sputum, that is, no tubercle bacilli were found in 70 per cent of this group. During the past 3 years 228 minimal cases discharged from this sanatorium never had a positive sputum. The number of sputum examinations in each case was anywhere from 1 to 50.

A study of the group who never had a positive sputum showed that only 69 per cent gave a history of persistent cough; only 50 per cent of them gave a history of expectoration; hemoptysis was present in only 21 per cent; night sweats in 35 per cent; definite rales in only 83 per cent and positive X Ray findings present in about 97 per cent. In a study of 201 cases by Dr. Lawrason Brown at Saranac Lake, he found only 35 per cent with positive sputa and in the same study he found rales in 70 per cent of cases. Bray has shown that only 23 per cent of the cases of incipient tuberculosis exhibit rales on deep breathing alone and with expiration and cough 76.5 per cent showed rales.

Considering the subject from a pathological standpoint, we can see why a tuberculous process may not show bacilli in the sputum, as it is well known tubercle formation is followed by encapsulation. There is formed, as Professor Aschoff has shown, a "specific capsule" whose function is to prevent the spread of the caseating process. If the disease is incipient and the tissue resistance good, ulceration will not occur and tubercle bacilli will not enter the bronchial tree. Pottenger says, "Tuberculosis is often present, sometimes even in a widely scattered area, and at times may be causing marked clinical symptoms without the tubercles rupturing and bacilli appearing in the sputum. In fact, most patients show symptoms which to the alert diagnostitian would warrant a diagnosis of active tuberculosis before bacillus bearing sputum appears."

On the other hand, as the disease progresses and advances, the encapsulating barrier is destroyed, bronchial ulceration occurs, and the sputum becomes loaded with bacilli. Again, as pointed out by Professor Aschoff, tubercle formation is often confined to the periphery of the lung, near the pleura. Thus, we can readily see why the contents of a tubercle may not reach the bronchial tree; hence, the patient may not cough or expectorate.

Pathologically, hemoptysis, too, is not an early manifestation for when it occurs we have a well established process of ulceration with the resulting erosion of blood vessels and hemorrhage. Certainly this condition does not exist in early inflammation, exudation and tubercle formation. Therefore, to consider this symptom as an index of early tuberculosis is to ignore the antecedent pathology.

Concerning rales, Cabot says, "The term rales is applied to sounds produced by the passage of air through bronchi which contain mucus or pus, or which are narrowed by swelling of their walls."

We can see why a tuberculous process may not offer the necessary mechanism for their production. It is during this period of early infiltration when we find limited mobility at the top of a lung due to muscular contraction—nature's efforts to arrest a diseased organ and increased whispered voice with some diminution in resonance at one or both apices of the lung, a diagnosis of pulmonary tuberculosis should be considered. These findings, however, are not infallible, and we would perhaps diagnose too many cases as early tuberculosis.

As Dr. Matson says, "I fear some are diagnosing only 75 per cent of the manifest cases, and 120 per cent of incipient cases." However, with due respect to the wisom of this statement, we need not fear being accused of undue enthusiasm. Furthermore, to support our suspicions of an early case, a careful history is of the utmost importance. It has been repeated many times by competent clinicians that if it were a matter of choice they would rather make a diagnosis on a careful history than on an examination which is frequently done in a hurry. Regarding the history of a given case, Dr. Lawrason Brown says, "Symptoms without physical signs demand treatment, while physical signs without symptoms require careful watching." Again, Dr. Otis, quoting Gee, says, "Therapeutics must begin before physical signs have developed. If you wait for physical signs, you wait too long." Dr. Lawrason Browns again says, "In few other serious diseases do we have to depend so much upon slight symptoms for an early diagnosis"; and in no other disease is a history so important.

One doing tuberculosis work in the sanatorium is impressed with the slight symptoms patients frequently have to offer in early tuberculosis. These vague complaints may not necessarily point to pulmonary disease; and unless early tuberculosis is thought of one can readily pass them up as insignificant. A patient frequently complains of undue chilliness, with slight change of temperature. We frequently see them enter the office wrapped up in excessive clothing, fearing the least chilling. Undue nervousness is also one of the early symptoms, often passed up as neurasthenia. They are apt to be introspective and apprehensive. Vague aches and pains all over the body, especially over the pectoral and shoulder regions, is also frequently an early symptom.

Digestive disturbances, especially anorexia, flatulence and constipation are notoriously early symptoms. Frequent colds are a common complaint, many of them stating that no sooner are they through with one cold than they have another. A cold may be nothing less than an early pulmonary process, while to the patient it is only a "cold." Fatigue is a very prominent symptom, especially morning fatigue. Sleep seems to be very little refreshing and the patient feels like remaining in bed all day. They often feel lazy, have no ambition to do anything and have no "pep" as they often put it.

All these symptoms may sound of minor importance, but unless they are interpreted in the proper light, one may miss the opportunity of making an early diagnosis.

In the same way the physical signs that go with early tuberculosis may be very slight; such as infiltration at one or both apices, as evidenced by diminished resonance on percussion, increased whispered voice sounds, and slight increase in tactile fremitus and vocal resonance. We have frequently noted in early cases tenderness to touch over the back of the neck muscles and over the muscles of the shoulder regions. These signs can be easily overlooked, but if interpreted in their proper light with a careful history as a background, may become very significant.

In considering symptoms and signs of early tuberculosis it is of the utmost importance to consider the possibility of other diseases, and a careful differential diagnosis must be made. It is a constitutional disease and in its early stages simulates many diseases.

We shall be on the road to the early treatment of tuberculosis only when we recognize that not every cold, clammy skin with rapid pulse is "neurasthenia"; that loss of appetite and indigestion may mean more than an "acute gastric upset"; and that loss of strength may require more than the simple expedient of prescribing a tonic.

Summary: (1) There is no single sign that must be present or is always present in early tuberculosis; (2) early tuberculosis manifests itself by symptoms which are notoriously elusive and only act as smoke-screens for the underlying disease; (3) early tuberculosis simulates many other diseases and this must be borne in mind; (4) a careful history is the most important aid in the diagnosis of early tuberculosis; (5) two hundred and twenty-eight minimal cases discharged from the Rutland State Sanatorium in the past three years never had a positive sputum; (6) positive sputum and rales denote progressive dsiease and frequently too far advanced to benefit by sanatorium treatment.

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PROPOSED NEW CLASSIFICATION OF JUVENILE TUBERCULOSIS

BY HENRY D. CHADWICK, M. D.,* WESTFIELD, MASS.

Two years ago a Committee of the American Sanatorium Association presented their report on the classification of juvenile tuberculosis at their December meeting. After discussion of this report it was voted to try out the proposed plan and then bring it up for further consideration at a subsequent meeting. Following is the report then presented:

CLASSIFICATION OF JUVENILE TUBERCULOSIS

"The scheme now in use for the classification of tuberculosis was intended to apply to the adult type of disease, which is distinctly pulmonary. Pathologists find that whenever a person has pulmonary tuberculosis that the lymph nodes nearly always show evidence of the same disease. Even if the primary focus of infection from the pathological point of view may have been the lung, the important fact remains that in children the first tuberculosis lesion that the clinician can demonstrate is most frequently found in the lymph nodes and tissue of the hilum.

Tuberculosis in children under three years of age is usually of a general type. If it does localize in the hilum the diagnosis can only be arrived at by exclusion as physical signs are absent or ill defined.

Tuberculosis as it is found in children over three and under twelve years of age is a distinctive type in that the lesions are first found in the lymph nodes about the trachea, the bronchus and its large subdivisions. It may involve the lymphoid tissue that is in close contact with the branches of the bronchial tree and later produce lesions in the adjacent tissue. It rarely involves the apices, but when this does occur we have the adult type of pulmonary disease.

It does not seem consistent to classify a child with tuberculosis limited to the bronchial glands and the root of the lung in the same group with adults who exhibit lesions to the extent that is defined under the term minimal.

The committee therefore make the following recommendation—that the term "Hilum Tuberculosis" be added to the present classification; that it should be used to define those cases of tuberculosis that present the following symptoms and physical signs:—

SYMPTOMS

Local: Frequent "colds," cough, hoarseness, rarely loss of voice, often all local symptoms are entirely absent, and when they appear they are usually transitory.

Constitutional: Undue fatigue, lassitude, nervous irritability, anorexia. Weight may be normal, but is more often subnormal, or there is a retardation of growth—rarely loss of weight. The musculature is usually flabby, and the posture shows evidence of muscle fatigue. Sweating—not the type known as night sweats, but a tendency to profuse perspiration without apparent cause. Occasionally brief periods of unexplained elevation of temperature above 99.6 but rarely over 100.5. The frequent association of phlyctenular keratitis or conjunctivitis, scrofuloderma and lupus are always to be kept in mind.

PHYSICAL SIGNS

Percussion: Paravertebral dullness—the impaired resonance is found between the scapulae and often extends upward to the supraspinous fossae. Parasternal dullness. This is most frequently found at the right of the sternum and may be erroneously interpreted as due to an enlarged heart.

Ausculation: Voice and breath sounds are usually normal. Rales are rarely found and when present are usually due to some other cause than tuberculosis.

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*From the Department of Public Health, Commonwealth of Massachusetts.

Roentgen Findings: One or more of the following conditions to be present:—

1—Prominent bronchial trunks with definite beaded appearance or nodular in outline, extending from the hilum.

2—Enlarged lymph nodes, varying in number and density, imbedded in the thickened tissues of the hilum. One or both hila may be involved.

3—Diffuse shadows of varying density throughout the hilum. Occasionally there are cloudy masses with irregular outlines projecting into the adjacent tissue due to involvement of the deep parenchyma.

Tuberculin Test: The Von Pirquet or intracutaneous test must be positive.

All other sources of toxaemia or infection that could produce similar symptoms must be excluded before a positive diagnosis of hilum tuberculosis can be made."

Members of Committee:

Dr. Henry D. Chadwick, Westfield, Mass.
Col. George E. Bushnell, Bedford, Mass.
Dr. Walter A. Griffin, Sharon, Mass.
Dr. John J. Lloyd, Rochester, N. Y.

Dr. Walter L. Rathburn, Cassadaga, N. Y.

Many of the physicians engaged in sanatorium work do not have an opportunity to study children as their institutions are restricted to adults. They do not, therefore, realize the importance, and I would say the necessity, of having another term by which we may classify the large number of children who are found with the tracheo bronchial stage of tuberculosis. This type of disease involves the lymphoid tissue at the root of the lungs and the proposed term of hilum tuberculosis describes its location.

We need this term to describe the children whose tuberculosis is as yet confined to the lymphoid tissue about the trachea, the right and left bronchus and the larger subdivisions of the bronchi.

It is in this tissue that tubercle bacilli lodge and very frequently produce disease, in children from three to twelve years of age. Later, if the disease is not arrested in these glands, the parenchymatous tissue becomes involved and then we have the adult type of pulmonary tuberculosis. This can then be classified under the accepted nomenclature of minimal, moderately advanced or advanced according to the stage of the disease.

REASONS WHY THE TERM HILUM TUBERCULOSIS SHOULD BE ADOPTED AS A PART OF OUR NOMENCLATURE OF CLASSIFICATION

The present classification applies only to disease of the pulmonary tissue. Therefore, it cannot be correctly used to define tuberculosis of the lymph nodes at the root of the lungs with no involvement of the parenchyma. If it is so used, a false impression is conveyed as to the location and nature of the lesion.

Hilum tuberculosis is a comparatively benign condition when contrasted with pulmonary disease even when it is in an early stage of development.

The prognosis of hilum tuberculosis is good when treatment is given.

The prognosis of pulmonary tuberculosis is always doubtful even with good treatment.

From an economic point of view a child with hilum tuberculosis when restored to health and a state of normal nutrition by being taught good habits and good hygiene is a good insurance risk, while a person with the earliest type of pulmonary tuberculosis must be considered a poor risk until after a lapse of years has demonstrated the arrest of the disease.

It would be a manifest injustice to many children who have had the benefit of sanatorium treatment if these two phases of tuberculosis must continue to be grouped together.

From a statistical point of view, it would be very confusing now that statewide children's clinics are to be held to have the several thousand cases of hilum tuberculosis that will be revealed in the next ten years reported and added to the pulmonary tuberculosis group. For this reason alone, these cases when reported must be put into a separate group.

Finally, a new term is needed to keep clear in our minds a phase of tuberculosis that is primarily an adenitis and just as much an entity as cervical adenitis—the difference being only in location.

For the reasons just given, the term hilum tuberculosis should be generally adopted and used as a descriptive term for those cases of tuberculosis where the disease is confined to the tracheo bronchial lymph nodes.

This is the active type of disease usually found in childhood, less frequently in adolescence and but rarely in adults.

MEDICAL PROGRESS

PROGRESS IN PULMONARY TUBERCULOSIS

BY JOHN B. HAWES, 2D

As I have said in previous reports it is a difficult matter to put in writing the progress which has been made during the year in such a disease as tuberculosis which has so many ramifications in medicine as well as in our entire social and economic fabric. That progress is being made, however, is an indubitable fact, absolutely clear to those of us who are working in this field.

Twenty years ago the mortality per 100,000 in this disease in Massachusetts was something over 300. At the present time it is something under 90. It is impossible to calculate what this reduction means in the saving of lives, money and happiness but it means a very large amount of each. During these twenty years there has been no great discovery such as has been the case of insulin in diabetes and arsenic preparations in the treatment of syphilis. Progress has been made by slow, painstaking attention to details and by persistently hard work.

Diagnosis: There has been nothing new in the diagnosis of tuberculosis.

Hoffman, A. M. (Am. Rev. Tuberc., 8:59, Sept. 1923) has studied the following signs and comments on their accuracy and value as follows:

1. Chest movements. These were correct as a diagnostic sign in 87.5 per cent.
2. Muscle spasm. Correct in 57.5 per cent, absent in 43.5.
3. Chest thickness. Diminished on the affected side, 51 per cent, increased, 22 per cent. Apparently, this sign is of little value.
4. Pleurisy and chest movements. Movements were limited in 54 per cent.
5. Excursion of diaphragm. Correct in 41 per cent.

Yates, A. L. (Lancet, 205:968, Nov. 3, 1923) calls attention to certain cases of painless infection of the accessory sinuses which simulate and have been diagnosed as pulmonary tuberculosis. In these cases there had been a cough, greenish sputum, loss of weight and strength and a slight fever. *This is an important point to remember.*

Hart, A. L., and Gekler, W. A. (Am. Rev. Tuberc., 8:53, Sept. 1923) refer to the combination of mitral stenosis with hyperthyroidism simulating pulmonary tuberculosis.

Sweany, H. C. (Am. Rev. Tuberc., 8:40, September, 1923) speaks of cases in which an unresolved broncho-pneumonia or a beginning bronchiectasis may be responsible for most of the symptoms of early tuberculous disease.

Bacmuster, A. (Muncl. Ned. Wochusch., 70:120, Sept. 21, 1923) calls attention to the need of making what he calls a "quality" diagnosis of tuberculosis and not merely establishing the fact that the patient has consumption. *This is a most important and often neglected factor in tuberculosis.*

Prichard, J. S. (Am. Rev. Tuberc. 8:304, Nov. 1923) refers to cases of malignant diseases of the lung which had been mistaken for tuberculosis.

Heise, F. H. (Am. Rev. Tuberc. 8:278, November 1923) found that clinical tuberculosis was correctly diagnosed in cases where the breath sounds were unchanged and there were no rales in 60 per cent while 50 per cent showed parenchymatous x-ray changes. When rales occur some definite pulmonary changes are usually present. Moderately coarse rales in the upper parts of the lung are the only real reliable auscultatory sign but it must not be argued, however, that the presence of such signs does not mean that clinical pulmonary tuberculosis is present.

X-ray in Diagnosis: The attitude of the majority of x-ray men in regard to the value of the x-ray in diagnosis of pulmonary tuberculosis is, I am glad to note, becoming an increasingly conservative one.

Tillman, J. (Hygiea, 85:457, June 15, 1923) concludes from his investigations that the x-ray does not render all other methods of diagnosis superfluous but that it is more accurate than the stethoscope.

Bissell, F. S. (Am. J. Roentgenology, 10:428, June 1923) believes the x-ray to be of great value in determining activity. Comparatively few clinicians agree with this. He likewise finds it of great value in determining prognosis. In his opinion the diagnostic procedure employed for the recognition of early tuberculosis is as follows:

1. History and symptoms.
2. X-ray studies.
3. Tuberculosis tests.
4. Physical signs.
5. Laboratory tests.

Melville, S. (Arch. Radiol. and Electrotherapy, 28:23, June 1923) disputes the statement of Sir James Fowler in his recent book that "x-rays never indicate the presence of unsuspected disease." He shows cases which have been called negative on careful physical examination by competent men in which evident signs of tuberculosis were found by x-ray.

Sampson, H. L. (Brit. J. Tuberc. 18:20, Jan. 1924) in a general article sane and sound discusses the use of the x-ray and the differential diagnosis of pulmonary tuberculosis.

Matson, R. W. (Northwest Med. J., 23:9, Jan. 1924) believes that diagnosis really depends upon clinical history and physical findings.

Stivelman, B. P. (Med. J. and Rec., 119:1, Feb. 6, 1924) believes that the history, physical findings and x-ray should be correlated. The x-ray in his opinion is most valuable as an aid in determining the extent of disease.

Differential Diagnosis: Bezancon, F. et. al. (Bull. Acod. de Med. 91:100, Jan. 22, 1924) describes a form of dry bronchiectasis associated with frequent large hemorrhages.

Gonzalo, G. R. (Siglo Med. 73:192, Feb. 23, 1924) discusses various conditions such as mitral stenosis, catarrhal and subacute influenzal infections, nose and throat disorders which may cause apical infiltration and disappear after proper treatment.

Greves, E. H. (Brit. Med. J., Dec. 15, 1923) takes up the subject of chronic bronchitis which he considers only a secondary manifestation of a more serious malady such as gout, arteriosclerosis or chronic heart and kidney diseases.

Oliver, T. (Practitioner, 111:241, October 1923) takes up the subject of pulmonary fibrosis. This may result from tuberculosis, syphilis, silicosis and influenza. He believes that the silicosis definitely predisposes the patient to tuberculosis. It is a careful article on the types and causes of various forms of fibrosis of the lungs.

Legge, (J. Am. Med. Ass'n, 81:809, Sept. 8, 1923) presents an excellent work on miner's silicosis confirming that already done by Jarvis at Barre, Vermont, under the auspices of the National Tuberculosis Association. The symptoms may be divided into three stages:

1. Early stage, where there is loss of weight, anemia and some cough and sputum.
2. Where there is tightness and constriction in the chest, limitation of movements, an increasing cough and sputum, shortness of breath, and loss of appetite and weight.
3. Advanced stage, in which there is marked dyspnoea and other symptoms with dullness on percussion especially over the mid-portion of the lungs with rales everywhere.

Treatment consists of a change in occupation and general educational and hygienic measures.

Böhme (Fortschr. a. d. Gel. d Röntgenstrahlen, 31:33, 1923) discussing the differences between the x-ray picture of tuberculosis and pneumoconiosis emphasizes the symmetry of the latter process in the chest.

Saupe (Fortschr. a. d. Gel. d Röntgenstrahlen, 31:35, 1923) believes that tuberculosis is a comparatively minor cause of death in cases of pneumoconiosis but that the latter on the other hand prepares the soil for cancer although advanced pneumoconiosis and true malignant diseases of the lung are both partly responsible for the picture known as "miner's disease." *This is an interesting and new concept which, however, would bear more investigation before being accepted.*

Pancoast, H. K. (Ann. Clin. Med. 2:8, July 1923) believes that tuberculosis and pneumoconiosis are the two most important factors in causing extensive lung fibrosis.

Watkins-Pitchford, W. (M. J. of Australia, 2:382, October 13, 1923) discusses the characteristics of the silicotic chest, chief of which is the great impairment of the normal elasticity, in contrast to emphysema so often found with a chronic bronchitis. The specific x-ray sign of early silicosis is fine, uniformly distributed and symmetric mottling of both lungs. Unless this is present under the x-ray a diagnosis of silicosis is hardly justified.

Pulmonary Syphilis and its Relation to Pulmonary Tuberculosis: This difficult and yet most interesting subject has been given a great deal of study during this past year.

Roque, G. (Lyon Med. J. 132:635, July 25, 1923) in speaking of the combination of syphilis in tuberculosis believes that iodides must be completely discarded and arsenic preparations alone used. Many of our best men in Massachusetts at least who have made an extensive study of syphilis would not agree with this statement.

Bernard, L. (Rev. de la Tuberc. 4:536, September 1923) believes that syphilis does not affect fibroid tuberculosis. He can see likewise no effect of anti-syphilitic treatment on tuberculous lesions. He emphasizes the uncertainty which characterizes the relationship of syphilis and tuberculosis of the lungs.

· Bowman, A. K. (Lancet, 205:1288, Dec. 15, 1923) considers pulmonary syphilis extremely rare. Syphilis along with tuberculosis must be handled with great care. In proof of the above statement he believes that treatment by arsenic preparations may be followed by disaster.

Hawes, J. B. (Boston Med. & Surg. J. 190:92, Jan. 17, 1924) concludes that given a patient with a definite history of syphilis and positive Wassermann and signs of syphilis elsewhere who has in his lungs by x-ray and clinical examination evidence of an extensive destructive process with a sputum negative to tuberculosis pulmonary syphilis should be strongly suspected. He emphasizes that in syphilis we treat the disease but that in tuberculosis we treat the patient. He agrees with Bowman and others that pulmonary syphilis is an extraordinarily rare disease.

Howard, C. P. (Am. J. Syph. 8:1, Jan. 1924); Sayers, F. E. (Ind. State Med. Ass'n J. 17:83, Mar. 15, 1924) cover the same subject.

Gas and Tuberculosis: Cole, H. C. (Am. R. Tuberc. 71:230, June 1923) believes that many of the gassed tuberculous service men in whom tuberculosis was diagnosed would have come down with tuberculosis regardless of their gassing. He believes that gassing has very little to do with the later development of pulmonary tuberculosis.

In my own opinion, after a fairly extensive study of approximately 2000 service men during the past three or four years I quite agree with Cole that gassing was a comparatively minor factor if any at all in the development of tuberculosis.

Hilus and Bronchial Gland Tuberculosis in Children: This subject is engaging the attention of the medical world in this country at present. Out of the chaos of conflicting opinion of x-ray men and clinicians, of pediatricians and chest specialists, etc., some semblance of order seems to be appearing. I still believe that the diagnosis is made far too often on too little evidence and that much evidence in the way of signs and symptoms which at present we believe to be trustworthy will soon be found to be unreliable. Much work is being done so that sooner or later our position will be a clearer and saner one than it is at present.

Riviere, C. (Brit. Med. J., Sept. 22, 1923) believes that in practically all cases of bronchial gland tuberculosis parasternal and intervertebral dullness can be demonstrated. Likewise he still believes in the value of the Kröenig sign consisting of a narrowing of the apical isthmus.

With the exception of a few men in Massachusetts the great majority of observers believe that parasternal and intervertebral dullness as a sign of enlarged tuberculous bronchial glands may well be discarded. Henry D. Chadwick of Westfield is about the only man I know who sincerely believes that he can demonstrate parasternal and intervertebral dullness in these cases. Up to the present time Dr. Chadwick and I have agreed to disagree on this point. Dr. Chadwick finds a warm adherent of his views in Riviere.

Hotz, A. (Schweiz. Med. Wochnschr. 53:862. September 13, 1923) calls attention to the fact that the visibility of lymph glands in the x-ray picture depends upon their size and position. The x-ray alone is not a decisive factor; clinical examination settles the question.

Anderson, E. D. (J. Am. Med. Ass'n, 81:1191, Oct. 6, 1923) found 34 children in whom the x-ray picture was negative as far as enlarged hilus glands were concerned and yet in whom 23 showed physical signs of such enlargement. He believes d'Espine's sign of no value and interscapular dullness a most convincing sign as well as a most difficult sign to obtain correctly.

Miller, O. O. (Kentucky Med. J. 21:309, July 1923) considers a history of exposure the most important point, the tuberculin test usually should be positive, and x-ray examination indispensable. Such children may be found entirely free from clinical signs and symptoms. He still believes in the d'Espine's sign.

Carroll, W. E., Gibson, C. B. (Boston Med. & Surg. J., 190:359, Feb. 28, 1924) are of the opinion that when the d'Espine's sign is combined with x-ray evidence of glands, positive Von Pirquet and a toxemia not satisfactorily explained plus a history of exposure, hilus tuberculosis should be diagnosed.

Koopman (Deutsch. Med. Wohnschr. 50:80. Jan. 18, 1924) says d'Espine's sign is the surest clinical symptom of gland disease. The x-ray may be negative with a positive d'Espine's sign if the retrotracheal glands are enlarged.

Delhern, L. and Chaperon, R. (J. de radiol. et d'electrol. 7:497, Nov. 1923) believe that healthy hilum glands are *not* visible by the x-ray.

Honeij, J. A. (Am. Rev. Tuberc. 9:1, March 1924) in a scholarly article reviews this subject thoroughly and well.

Treatment: The sanatorium and all that it stands for still remains the mainstay for the treatment of tuberculosis in all forms. The limiting of pneumothorax treatment to its proper sphere, surgery and artificial means of compressing and collapsing the lungs—all received attention while serums and vaccines have continued to come and likewise to go during the past year.

Otis, E. O. (Boston Med. & Surg. J. 189:369, Sept. 13, 1923) gives a careful paper on a much neglected subject—the treatment of symptoms in tuberculosis. He emphasizes the fact that it is the personality of the physician that has perhaps more to do in relieving the mental depression of the patient than anything else.

Pattison, H. A. (J. Am. Med. Ass'n, 81:1252, Oct. 13, 1923) believes that fatigue and its accompaniments constitute a large factor in arousing into activity a latent tuberculous infection. Rest is essential but the exhaustion of fear and worry which may be either the cause or the effect of tuberculous activity may not be dispelled by rest in bed. It can be relieved by occupational therapy, a useful means of securing mental rest.

Brown, P. K. (Cal. St. J. Med. 21:336, Aug. 1923) is likewise of the opinion that rest is essential in treatment and describes in a general way the various means of obtaining local, general physical and mental rest.

Swezey, S. (Colo. Med. J. 20:186, July 1923) carries rest treatment to a very great extreme. His patient is kept in a separate, sound-proof room with a day and night nurse, the patient lying on his back relaxed with movements of all kinds reduced to a minimum, a bed pan used and feeding done by the nurse. Visitors are forbidden and no reading or writing allowed and no physical examinations. He emphasizes that mental as well as physical relaxation must be obtained but does not state how this can be done No infringement of rules is allowed and rigid discipline is carried on. This is continued for one month after all signs of toxemia have subsided. This method has been successful, he claims, in patients in whom all other methods have failed.

In Massachusetts at least the number of patients for whom such radical treatment could be carried out is very, very small indeed.

Zacks, D., Pettingill, O. S., and Stanhope, A. H. (Boston Med. & Surg. J., 188:946, June 14, 1923) as a result of their investigations find no definite relationship between the natural position assumed in sleep and the side affected. They are strong advocates of physical, mental and emotional rest in bed.

Pneumothorax: Matson, R. W., Matson, R. C. and Bisaillon, M. (J. Am. Med. Ass'n, 81:713, Sept. 1, 1923) report on 600 patients whom they have had under close observation for the past ten or twelve years. They regard pneumothorax as an exceedingly valuable method of treatment.

Henell, H. and Stivelman, B. P. (Am. Rev. Tuberc. 7:921, July 1923) renew their plea for low intrapleural pressure in using pneumothorax treatment.

Tillman, J. (Acta. med. scandin. 59:515, Oct. 4, 1923) reports 65 cases of bronchiectasis treated by pneumothorax and concludes that this may be of the greatest benefit but that it is not

yet clear what are the special indications for this form of treatment in bronchiectasis.

Golden, S. (Am. Rev. Tuberc. 8:170, Oct. 1923) **is of the opinion that thoracic restrictions** applied by means of adhesive straps, etc. can take the place of pneumothorax with all of its advantages and none of its dangers.

Heliotherapy: **An almost endless list of references to this subject might be given. It is being accepted so enthusiastically that the danger has arisen of its being carried on too fast and in too radical a fashion.**

Lo Grasso, H. (Boston Med. & Surg. J. 190: 187, Feb. 7, 1924) gives the details of the remarkable work which he with the late Dr. Pryor have carried on at Perrysburg in heliotherapy with the details of the methods used while Rollier, A. (Am. Rev. Tuberc. 8:489, Feb. 1924) describes his pioneer work in this line.

Turnbull, W. G. (Atlantic Med. J. 27:132, Dec. 1923) presents sound and practical advice on sunlight treatment as carried on with tuberculous children at a Pennsylvania state sanatorium in the Allegheny Mountains.

Schwatt, H. and Sternbach, M. M. (Am. Rev. Tuberc. 8:9, Sept. 1923) discussing the value of the x-ray and ultra-violet rays in tuberculosis of the intestines are unable to confirm the work of Sampson as to the x-ray reliability in diagnosis and are not at all enthusiastic about the use of ultra-violet rays in treatment.

Miscellaneous: Hanford, J. M. (Internat. Clin. 4:115, Series 33, 1923) discussing tuberculous cervical adenitis and its treatment relies on conservative surgical measures.

McEachern, J. D. (Canad. Med. Ass'n J. **13:866, Dec. 1923) believes that radical excision offers the best results while**

Molyneux, E. S. (Brit. Med. J., Nov. 18, **1923) advises that the gland be treated by radium.**

***Economic and Social*: Varrier-Jones, P. C. and Allbutt, C. (Lancet, 205:912, Oct. 20, 1923) do not believe that vocational training as given in our sanatoria is of any lasting economic value to consumptives. They believe that the "village settlements" as carried on at the Papworth Colony with its various industries does give proper training and demonstrates that the consumptive can earn a wage sufficient with a small subsidy to provide the necessaries of life for himself and his family.**

An attempt to do this is being carried on at Rutland, Massachusetts, at the present time. The climatic situation favors any effort in this direction in England and handicaps any such scheme in this part of our country. I believe that as far as the farm colony or village settlement is concerned it is in the southwest that it will produce the best results.

White, W. C. (Am. Rev. Tuberc. 8:178, Oct. 1923) deplores the **growing dissociation and** lack of mutual respect between active agencies of the tuberculosis movement and the medical profession. **I have already commented on this** elsewhere.

Sooner or later I believe the time will come when the public **will demand that tuberculosis,** its diagnosis, treatment and its importance as an economic and social problem **will be given the attention** which it deserves in our medical schools which at present **is anything but the case.**

NEW ENGLAND SURGICAL SOCIETY

Season of 1924 at Hartford, Conn., September 26 and 27

PRIMARY CARCINOMA OF THE GALL-BLADDER AND BILE DUCTS

BY RICHARD H. MILLER, M. D., F. A. C. S., BOSTON, MASS.

A RECENT author (Tilton[1]), in considering the dangers to life associated with gall-stone disease, classes them as follows:

1. Suppurative or gangrenous cholecystitis;
2. Cholangitis;
3. Malignant disease of the gall-bladder;
4. Operation in delayed cases.

The third on this list, malignant disease, is the only one of the four which has a definitely fatal prognosis, and with it we are concerned in this paper. Cancer of the gall-bladder has not produced the discussion and numberless papers that other diseases have, because it is relatively so uncommon, and most cases when recognized as such are beyond the possibility of surgical assistance. Three cases were reported prior to 1800, and since then the number of cases in the literature has been constantly increasing. Kaufmann states that it forms 5 to 6 per cent. of all carcinomas.

The frequency with which cancer of the gall-bladder occurs, judged by its incidence in relation to gall-bladder operations, varies with different authors, the figures running between 1 and 10 per cent. Erdman[2], in 178 gall-bladder operations, found cancer in 7.3 per cent.; Deaver, in 1000 cases, found it in 1.6 per cent.; Smithies, in 1000 cases, 2.3 per cent; and Magoun and Renshaw[3], from the Mayo Clinic, 1.06 per cent. in 7878 gall-bladder operations. In 592 autopsies on gall-stone cases, Fawcett and Rippman found it in 8.1 per cent. This is the highest figure of all, but it is only natural that the procedures at autopsy should be more searching than those of a surgical operation, and a condition which might be over-looked at operation would assuredly be found at a post-mortem. Taking the average of the above figures, we find that in 10,648 gall-stone cases in the literature, cancer occurred in 4.1 per cent.

The relation of stones to malignant disease is interesting and important, and the great majority of cases show the presence of stones prior to the development of the new growth. The percentage of cases in which stones were present varies from Musser's figure of 69 per cent. to Janowski's of 100 per cent., most authors varying from 70 per cent. to 90 per cent. Keen[5] puts the figure at 95 per cent. In the 84 cases from the Mayo Clinic[3] cholescystectomy was performed in 38, and 37 of them showed stones; the rest were merely explorations. There is certainly much evidence to show that gall-stones predispose to cancer of the gall-bladder, though the same is not necessarily true where the growth is primary in the bile ducts. Some authors mention the possibility of stones forming secondarily to the cancer, as a result of the presumed stagnation of the bile, but this is a point of minimum importance. More important is the fact, as noted by Schnabel[4], that "there are cases which develop bladder cancer some years after stones have been removed, or it may develop at the old cholecystostomy site." In this connection it is interesting to learn that five of the Mayo cases had previously had chloecystostomies at other clinics. Schnabel also believes that cancer of the gall-bladder is more prone to follow upon ulcerative processes and their consequent cicatrices, than upon the mere presence of stones. To epitomize this paragraph, we would say that gall-stones constitute a pre-cancerous condition.

In considering the pathology, the following covers it briefly: "The chronic inflammation associated with gall-stones produces either a papillomatous outgrowth or an original downward growth with metaplasia. These initial tendencies or pre-cancerous conditions determine the later course of the tumor, yielding three main forms: (1) Villous, papillomatous, or fungating; (2) gelatinous; and (3) diffuse, flat, infiltrating carcinoma."[6] The first type forms a mass of papillary adeno-carcinoma which reaches considerable size and may grow down along the cystic and common ducts, invading the liver only late in the disease, whereas the other two early involve the liver, lymph nodes, and peritoneum. Distant metastases not infrequently occur. In numerous cases in which the gall-bladder has been removed for cholecystitis with cholelithiasis, microscopic pre-cancerous conditions have been found, such as elongation of the glands, overgrowth of epithelium, and round-cell infiltration. Squamous cell carcinoma is occasionally seen, and one case of primary melanoma is reported.

Sarcoma, which is much less common, is more apt to arise as the result of a long period of chronic inflammation or suppurative cholecystitis, founded on a background of stones. There are two forms of sarcoma: one from an overgrowth of smooth muscle cells, the other from the inflammatory new growth of connective tissue and blood vessels.[6] Spindle-cell sarcomas have been reported by Griffin, Segall, and Rolleston.

Carcinoma of the bile ducts is of importance because a relatively small growth will early cause obstruction and intense jaundice, and progress rapidly to a fatal termination. Rolleston has collected 100 cases, distributed as follows:

Common duct	44
Junction of three ducts	27
Hepatic duct	22
Cystic duct	7

Stones are notably absent, and the disease is more common in males than females—quite the reverse of the cases with cancer of the gall-bladder. Large tumors do not often develop. They occur in one of three forms: (1) Villous growths, which may distend and fill the ducts; (2) nodular masses tending to encircle and constrict the duct; and (3) a diffuse growth along the duct, converting it into a firm tube. The usual form is that of adeno-carcinoma.[6] Mayo-Robson[7] states that when the tumor arises at the neck of the gall-bladder, the pylorus is not infrequently affected, giving rise to symptoms suggesting cancer of the stomach. An interesting case is reported by Ruben[8] in which there was a papillomatous carcinoma of the gall-bladder, and a quite different type of adeno-carcinoma of the pylorus, co-existing in the same patient.

It is impossible to lay down any characteristic history which will be presented by patients with cancer of the gall-bladder. They may be roughly classified, as has been done by Magoun and Renshaw[3], into three groups:

1. Those who have for a long time had recurrent attacks of gall-stone colic, and in whom the picture suddenly changes to one of malignancy;
2. A similar group but in whom the malignant change is superimposed on a story of chronic dyspepsia, rather than on one of colic;
3. Those whose first symptoms have occurred within a year, and who present themselves with loss of weight, cachexia, pain or distress, a tumor in the region of the gall-bladder, and with or without jaundice.

The literature is more prolific with pathological pictures and post-mortem reports than it is with suggestions for surgical relief. And this must naturally be so, because the growth is usually inoperable when the surgeon attacks it. It is recommended that when possible the gall-bladder, the adjacent lymph-glands, and even the contiguous liver tissue be removed. In cancer in this region an ounce of prevention is worth a pound of cure, and an added incentive is given us for the removal of infected and diseased gall-bladders, rather than simple drainage of them.

In the past thirty years there have been at the Massachusetts General Hospital 2631 gall-bladder operations. Of this number, 63, or 2.4 per cent., have been cases of primary cancer of the gall-bladder or bile ducts. Fifteen were definitely proved by autopsy, 23 were proved by microscopical examination of excised specimens, and the other 25, though not pathologically proved, were included in the list because the findings were so characteristic and definite as to be beyond any reasonable doubt. No questionable case is cited, nor are a large number in which a diagnosis was made but in which there was no exploration. This figure of 2.4 per cent. is greater than that of the Mayo Clinic, but less than that of most other authorities. It probably represents a fair average of all.

There were 42 females and 21 males, a proportion of two to one. The oldest patient was 76, and the youngest 25. This latter patient, a young woman, had a cholecystectomy for what was clinically an acute cholecystitis; there was no suspicion of malignancy, but the pathological examination revealed a solid mass of epithelial cells in granulation tissue, and the diagnosis was made of "commencing carcinoma."

Gall-stones were definitely found in only 23 of these 63 cases, a percentage of 36. This is far below the statistics ordinarily reported in the literature, and can doubtless be explained by the fact that in many of the cases a simple exploration was done and the gall-bladder was not opened at all. Had the latter procedure been carried out, the figure would unquestionably have been much higher and would have compared favorably with the 70 to 90 per cent. of most others.

The pathological findings are of great interest, and I will briefly detail them. Of the 15 autopsies, the following reports were made:

Carcinoma of gall-bladder	4
Adeno-carcinoma of gall-bladder	5
Carcinoma of hepatic duct	1
Papillary adenoma of neck of gall-bladder	1
Papillary adeno-carcinoma of gall-bladder	1
Carcinoma of ampulla of Vater	1
Papillary adeno-carcinoma of common duct	1
Atypical carcinoma of cystic duct	1

Of the specimens excised at operation, the following reports were given:

Adeno-carcinoma of gall-bladder	9
Cancer of gall-bladder	6
Malignant adenoma	4
Mucous cancer	1
Squamous cell carcinoma	1
Papillary carcinoma of cystic and common ducts	1
Sarcoma of gall-bladder	1

The last case was a woman of 60 who had been sick for a year and bed-ridden two and a half months. A large mass was palpable in the region of the gall-bladder. The operation was simple exploration, but the patient died the same day, and the specimen was removed through the operation wound post-mortem.

The following observations were made as to symptoms:

42 had had indigestion, this term being used to cover all sorts of indefinite gastro-intestinal disturbances;
32 had noticed jaundice at one time or another;
20 had had attacks of gall-stone colic;
20 had observed loss of weight;
9 had been aware of a tumor in the right upper quadrant;
5 had had previous operations for gall-stones.

On entrance to the hospital, the following outstanding features were noted, viz:

A palpable mass	33 cases
Jaundice	26 "
Enlarged liver	26 "

In reviewing the above findings from the histories the only notable point is that 20, or nearly one-third, had lost weight. This is the one point suggestive of cancer, the others being as typical of simple gall-bladder disease as of malignancy. Considering the three noted objective findings: the palpable mass, jaundice, and enlarged liver, it may be said that they are all perhaps more common in carcinoma than in the absence of it.

Five patients reported previous operations, and they were all cholecystostomies, at periods varying from four months to four years before the cancer became apparent. All these, on their second entrance to the hospital, were clear-cut cases of cancer, and in one of them the growth appeared as an epithelioma involving the skin at the site of the drain and extending down to the gall-bladder itself.

Really the most interesting observation in these cases is that of the total of 63, in 7 cases the gall-bladder was removed simply for acute or chronic cholecystitis and beginning cancer was found by microscopical examination. It is fair to assume that had the surgeon been content with drainage, instead of cholecystectomy, the patients would have developed full-blown carcinoma, instead of having the incipient growth removed. In two others a small discrete thickening around the cystic duct caused the operator to be suspicious, and in each case his fears were confirmed by the pathological examination. It certainly is a fair conclusion that every diseased gall-bladder, whatever its appearance, may already harbor beginning malignant growth.

CONCLUSIONS

1. Primary carcinoma of the gall-bladder and bile ducts is not rare. It constitutes from 1 to 5 percent. of all gall-bladder disease.
2. Gall-stones and chronic cholecystitis constitute a pre-cancerous lesion.
3. Considering that from one to five of every hundred patients with gall-bladder disease will develop cancer if the gall-bladder is left in, cholecystectomy is the operation of choice, rather than cholecystostomy.

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Dr. Ralph W. French, Fall River: I enjoyed Dr. Miller's paper very much and I appreciate the labor that has been necessary to compile these figures and correlate them. At the Truesdale Hospital we have had 953 gall-bladder operations. Of these, eleven were primary carcinomata of the gall-bladder—1.18 per cent. Of the eleven, seven contained stones, and four did not contain stones. Four cases were simply explored. Considerable relief was obtained from this simple procedure. In three cases an attempt was made to remove the gall-bladder. Two of these died within three months. The third, a man, 60 years old, was operated upon eleven years ago. I present his specimen for your observation. It was a case of adenocarcinoma of the gall-bladder in the presence of stones. He is still living and well, 71 years old, and in excellent health.

As for the diagnosis of this condition—we rarely see cases in the early stage unless met accidently. A method of examination, but with which we have had no experience, is the use of tetrachlorphenolphthaline as advocated by Graham of St. Louis. This method may have some limitations. It may not show the outline of the gall-bladder when the cystic duct is completely obstructed. However, the gall-bladder might be outlined in this manner, and carcinoma of the gall-bladder could then be seen in the early stage. Instead of being considered a case of cholecystitis, carcinoma might be recognized and operation performed earlier.

Dr. Alfred M. Rowley, Hartford: My attention was called to primary malignant lesions of the gall-bladder last year. At that time I had two cases and I looked up the statistics of the Hartford Hospital and I found an unusually large number of cases. Unfortunately the cases are so far advanced that the question of primary lesion isn't possible to determine, and in some cases there was no bioscopy; but leaving out those cases that were definitely carcinomatous and those which had bioscopy to confirm them, there was a large percentage of cases.

As to the incidence of carcinoma in the upper part of the abdomen, in the stomach, duodenum, in the ampulla of Vater and in the gall-bladder I believe the percentage is larger than we had supposed it to be. We had supposed it to be small until we had reviewed the large number of cases in the hospital.

Dr. F. B. Lund, Boston: I think that Dr. Miller has called attention to an important argument for cholecystectomy. At the Congress in Philadelphia ten years ago, I reported three hundred and forty-eight cases of disease of the gall-bladder operated, with four instances of cancer, and used the same argument that he has done for cholecystectomy. I don't know how many I have had since. Two of these I want to speak of briefly. In one, a woman over seventy, large stones were removed, and she was drained. Two years later she came back with a round thing like a baseball right under the incision, and that proved to be a large, solid, carcinomatous gall bladder, which I removed. She was all right for a year, when she developed another mass confined to the abdominal wall, which was unquestionably an implantation, and, on removing it, I found no other evidence of disease in the abdomen. She died several years later of another cause. The other case was more distressing. A middle-aged woman, married, stout, on whom drainage was done, but, for good reasons, cholecystectomy was not done. A few months after the operation she returned with symptoms of jaundice, and I found carcinoma of the gall-bladder starting and involving the abdominal wall. The growth was removed with a portion of the abdominal wall, but she died a few months later.

Dr. R. H. Miller, Boston (closing): My attention was called to carcinoma of the gall-bladder by having two cases in quick succession in the past year; and I reviewed the value of cholecsytectomy versus cholecystostomy, and I saw that here was another argument for cholecystectomy which wasn't so commonly used. I believe that now with the number of cases that are found, that that is a very valid argument which can be used in the long run in favor of excision of the gall-bladder rather than simple drainage.

ACKNOWLEDGMENT OF BOOKS RECEIVED FOR REVIEW

The Journal acknowledges with thanks the receipt of the following books for review:

Lang's German-English Medical Dictionary. Third Edition Enlarged. Philadelphia: P. Blakiston's Son & Co. 613 pages.

Operative Surgery. By Warren Stone Bickham. Volume V. Philadelphia and London: W. B. Saunders Co. 880 pages. Price $10.

Human Constitution. By George Draper. Philadelphia and London: W. B. Saunders Co. 345 pages. Price $7.50.

A Manual of Diseases of the Nose, Throat and Ear. By E. B. Gleason. Philadelphia and London: W. B. Saunders Co. 660 pages. Price $4.

Essentials of Prescription Writing. By Cary Eggleston. Philadelphia and London: W. B. Saunders Co. 146 pages. Price $1.50.

Developmental Anatomy. By Leslie Brainerd Arey. Philadelphia and London: W. B. Saunders Co. 433 pages. Price $5.50.

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 10491

A Canadian railway engineer of thirty-nine entered September 3 complaining of nervousness, loss of speech and pain in the stomach. His memory was very defective, especially for symptoms relating to the central nervous system. The story given in the wards differed in most respects from that given in the Out-Patient Department.

F. H. One brother died of kidney disease.

Habits. Good.

P. H. Negative except for some dyspnea and pain across the chest upon exertion.

P. I. For six years he had had running of the nose. At one time he gave this as his chief complaint, though he said he was not troubled with head colds. For eight months he had had attacks of motor aphasia every week or two lasting one or two days. For three or four months he had been growing weaker. His dyspnea and chest pain on exertion had increased. For six months he had had colic with each stool. For three months the pain in the stomach had been getting worse. It was continuous and partially relieved by food. He was becoming more nervous and irritable. His sister reported temporary amnesia. The day before admission he was dizzy for the first time. During the illness he had gained weight.

Records of the Out-Patient Department. June 3. B. P. 128/84. Abdominal reflexes present but sluggish, especially the cremasterics. Deep reflexes upper extremities, knee and ankle reflexes normal. Babinski present both sides. Oppenheim, Chaddock and Gordon also present. No ankle clonus. Finger counting awkwardly done. Did not recognize the smell of acetic acid, alcohol or ammonia. Skin and mucous membranes pale. Right pupil greater than left and did not react to light. Left reacted poorly. Both reacted normally to distance. Fundi normal. The patient eloped. August 30. Red blood cells 2,080,000, polynuclears 74%, hgb. 50%, platelets somewhat decreased, some microcytes and occasional macrocytes, not much change in shape of cells, often well laden with hemoglobin. Striking sallowness and pallor of mucous membranes. Tongue showed slight atrophy of the marginal papillae. The patient eloped.

P. E. A well nourished, pale, anemic looking man whose mind functioned rather slowly. Mucous membranes pale. Pus expressed from the root of one incisor. Tonsils moderately enlarged on the left. *Heart* sounds of fair quality. Action normal. Apex impulse 8 cm. from midsternum in the midclavicular line, left border of dullness 1 cm. outside the midclavicular line. No other enlargement to percussion. Sounds of fair quality. Action normal. No murmurs. *B. P.* 105/72. *Lungs* normal. *Abdomen.* Voluntary spasm. Possible liver edge 7½ cm. below the costal margin. Bladder dullness two finger breadths above the symphysis. *Genitals* and *rectal examination* not recorded. *Extremities* normal. *Pupils* unequal, right greater than left. Right reacted to distance but not to light. *Reflexes.* Right knee-jerk greater than left. Oppenheim inconstant. Gait that of a weak man rather than anything else. *Rectal examination.* Sphincter seemed to have lost some of its strength. *Fundi.* Slight arteriosclerosis. Right disc showed a vein extending a short distance into it on the temporal side and then seeming to disappear.

T. 101.9°-102.5° at entrance, then 98.1°-100.3° until September 8, when it rose to 103.5°; afterwards not remarkable until a terminal rise beginning September 17 and reaching 107.8°. *P.* 78-104, with a terminal rise to 161. *R.* normal except for a terminal rise to 44. *Urine.* Amount not recorded, sp. gr. 1.008-1.018, the slightest possible trace of albumin at both of two examinations, leucocytes at both, one or two red blood corpuscles per high power field at the second. September 4 catheterized, residual urine ℥ 32. *Blood.* Hgb. 60%-55%, leucocytes 10,600-6,500, polynuclears 75%, reds 2,720,000-1,929,000, some polychromatophilia and variation in size, with a tendency to large cells, slight variation in shape, occasional achromic cells at one of three examinations, reticulated cells 2% at another. *Wassermann* in Out-Patient Department three days before admission strongly positive. Three Wassermanns in the ward strongly positive. *Bleeding time* 2 minutes. *Coagulation time* 12 minutes. Retraction normal in one hour and marked in three hours. *Serum dilution* 1:20 (surprise). *Non-protein nitrogen* 40 mgm. *Gastric analysis.* September 5. *Fasting contents,* 30 c.c. slightly blood tinged, white. No free HCl. Total acid 3 c.c. *Test meal.* 50 c.c. blood tinged, white. Total acid 9 c.c. Both showed fresh blood and very strongly positive guaiac. *Lumbar puncture September 4.* Initial pressure 180. Oscillation normal. Jugular compression 260. Respiration 170. After withdrawal of 5 c.c. pressure 150, after withdrawal of 5 more c.c. 140. 6 cells. Alcohol and ammonium sulphate positive. Total protein 63. Goldsol 5555553110. Wassermann strongly positive. *September 17.*

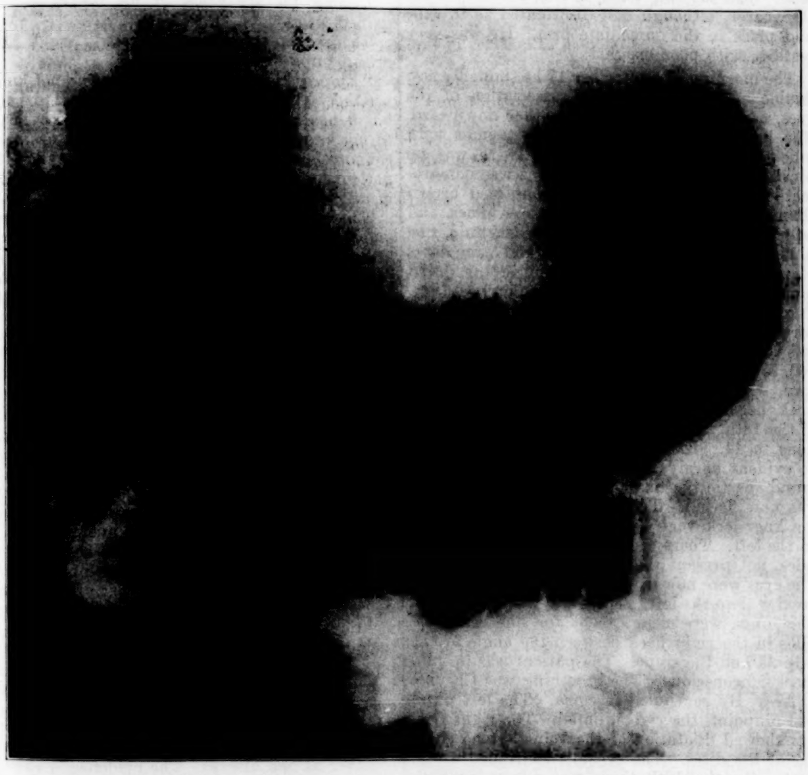


PLATE I. Area of diminished density in midportion of stomach suggesting a mass nearly as large as the palm arising from the wall of the stomach, freely movable with the stomach.

Initial pressure 270, after withdrawal of 5 c.c. 210, after withdrawal of 5 more c.c. 150. Jugular compression not recorded. 7 cells. Ammonium sulphate and alcohol positive. Wassermann strongly positive. Total protein 55. Gold-sol 5555542000. *X-ray* September 6. Frontal sinuses practically absent. No anatomical variation. Antra showed no definite evidence of pathological change, although plates not very satisfactory. Calvarium normal in outline. Sella showed no abnormalities in size or shape. Little calcification in the region of the pineal, which was normal. Plate of the chest not entirely satisfactory. No definite evidence of pathological change. No evidence of periostitis of the clavicles. September 12 examination confirmed the previous findings. Area of diminished density in midportion of stomach suggesting a mass arising from wall of stomach nearly as large as the palm, freely movable with the stomach. (See Plate I.) No peristalsis over this region. Constant on repeated examinations. Small six hour residue. First portion of duodenum, pyloric sphincter, and colon not remarkable. (Conclusion withheld.)

Orders. September 3. Anemia diet low in fat. Force fluids. Russian oil with fluid extract of cascara ℥ i 2 i.d. Veronal gr. x with luminol gr. 1½. Hyoscin gr. 1/200 s.c. if not quiet in an hour. September 5. Castor oil ℥ i in a.m. Mercury with KI ʒ 4 daily. September 9. Castor oil ℥ i in the morning. September 16. Saturated solution of KI 15 drops t.i.d. Heyden's solution minims v intramuscularly daily. September 17. Morphia gr. 1/6 s.c., later gr. 1/6 with atropin gr. 1/150 s.c., later morphia gr. 1/4, later gr. 1/6 every four hours. Shock treatment. Hourly pulse. Rectal glucose ℥ vi every four hours. Nothing by mouth. Bandage eyes. Hemoplastin ½ c.c. c.v. $CaCl_2$ (37%) ʒ i every half hour for three doses. Hemoplastin 1 c.c. s.c. every hour for three doses. B. P. every two or three hours and report if systolic drops below 90. September 18. Atropin sulphate gr. 1/75 s.c. Rectal tap (alternate glucose 5% and sodium bicarbonate 5%) every four hours. Hemoplastin 1 c.c. s.c. every three hours p.r.n. for further hemorrhage. Shock enemas every four hours.

The first two nights in the hospital the patient was disoriented and laughed easily. He looked myxedematous. He made no general improvement until the 9th, when he was mentally a little clearer, although still disoriented as to time and place in the immediate past. He was very restless, with poor insight.

The morning of September 17 he suddenly saw double and had complete disassociation of the eyes, one moving upward, the other downward. The left eye showed a lateral nystagmus with quick component to the right. There was no ptosis. Vomiting soon started, but was not projectile in type. The vomitus contained brown changed blood at first, one pint three times, and later bright red blood in the stomach fluid, one pint twice. Donors were collected and large doses of morphia given. The vomiting stopped and counts were found to be normal, the pulse steady. The eyes were bandaged. They were widely divergent and moving ceaselessly, even while he was deeply asleep. The blood pressure was 140/75 all that day and evening. The temperature, which had been practically normal for a week, began to rise, reaching 107.7° the evening of the 18th. The pulse rose to 162, the respirations to 44. Examination on the 18th showed no evident paralysis, although the left arm was found spastic the night before. His whole body was now flaccid. The arm reflexes were active, the knee-jerk very active on the right, normal on the left. There was marked Babinski on both sides, not present the night before. No clonus. The eyes were now divergent and the right pupil greater than the left. The heart was very rapid. The lungs were clear except for fine crackling râles in the right back between the angle of the scapula and the spine. The patient was in mild shock, unconscious. The breathing was Cheyne-Stokes. He continued in coma. The left pupil was pinpoint, the right dilated. The right fundus showed dilatation of the veins but no choking of the discs. The eyeballs continued divergent. On the 19th there was edema of both bases. Bubbling râles were heard well up to both angles of the scapulae. The temperature rose steadily. The breathing was very shallow, rapid and stertorous and continued Cheyne-Stokes. The breath was foul. The pulse was rapid and thready. The patient sweat profusely. A soft short systolic murmur was heard at the apex and the base. A_2 was greater than P_2. The right side of the heart was slightly enlarged to percussion, possibly dilatation. The abdomen was slightly distended with gas, not relieved by an enema. The patient was catheterized. The Babinski persisted. There was no Kernig. September 19 he died.

Discussion

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

The patient had an aphasia as distinguished from any paralysis.

During the six years of his illness he has gained weight.

There is a strikingly suggested Argyll-Robertson pupil.

"Eloped" is a technical term. I do not know whether it is confined to this hospital or not, but it has been traditional here for thirty years to my knowledge. It has none of the ordinary connotations of that word. It means that the patient went off without stopping to finish treatment.

This is a difficult and complicated history, much more so than most that we deal with here. The majority of complaints seem to refer to the brain,—aphasia, loss of memory, irritability, nervousness, vertigo. Then we have symptoms which seem like cardiac trouble: dyspnea and chest pain. Then there is some abdominal pain which does not sound very significant, chiefly pain with stool. In the Out-Patient record we have chiefly two sets of interesting facts, those pointing to the nervous system and especially to the brain, the Babinski and the other reactions, which are essentially the same thing obtained by different methods, and the marked anemia, the type of which is not clearly shown by the count of the cells, but which looks, as far as one can distinguish anything, like pernicious anemia.

All the facts so far spoken of can be accounted for by pernicious anemia. Anemia of the brain together with the cord lesions that often accompany it will give every single one of the lesions mentioned. There is no brain lesion whatever, including all the types of insanity, that does not occur in pernicious anemia, and there is hardly any cord lesion of any single type that does not occur in pernicious anemia. Hence when we have brain symptoms with anemia apparently of the pernicious type we link them together as one disease. The evidence is chiefly the high color index, the fifty per cent. hemoglobin with two million red cells, which is too much per cell, and the statement "the cells are often well laden with hemoglobin." Yet the blood is not very characteristic. There are a good many more questions about it which we should like to have answered positively or negatively before we make up our minds.

Pernicious anemia is so far the diagnosis chiefly in my mind. The alternative is syphilis of the nervous system, because brain lesions at this age—thirty-nine—are more often due to that than to any other disease.

NOTES ON THE PHYSICAL EXAMINATION

This is a normal heart on the whole. There is nothing abnormal about it except that the left border is one cm. outside the midclavicular line by percussion, which does not amount to anything.

The blood pressure is rather low, as one would expect with any such anemia as he has.

The bladder dullness would go very well with a cord lesion such as we have been assuming him to have.

"Extremities normal" contradicts what we have previously had as to abnormal reflexes. If the extremities are really normal then there is no Babinski.

A **Physician**: Do you find that these nervous symptoms vary from time to time?

Dr. Cabot: In the diseases I am thinking of, no. A uremic patient may get a Babinski and lose it again when his blood pressure goes down. But I don't think I have ever known that to happen in organic disease of the nervous system or in pernicious anemia.

The chief point we have for syphilis in the nervous system is the pupils, which are like those of syphilis.

The fundus examination is of no importance.

He had two days of terminal rise of fever.

There is a good deal of residual urine.

If these counts are correct this is almost certainly a pernicious blood. This is a very distinctly high color index, and all the rest is a stronger confirmation of what I thought before as to pernicious anemia. There is nothing characteristic about the coagulation time. The serum dilution is essentially normal. They are looking for some jaundice, which we often find with this type of anemia. The non-protein nitrogen is approximately normal. The gold solution reaction is that of syphilis and especially of the type of paresis.

We never get free hydrochloric acid with pernicious anemia.

The second lumbar puncture gives again a syphilitic and especially paretic gold solution curve.

The X-ray of the skull, probably taken for syphilis, gives nothing. We look for periostitis of the clavicles often in syphilis.

The mass in the stomach is enormously important if truly recorded. It is put in a rather dubious way, but there could not be anything much more important than that. It should mean a tumor of the stomach, benign or malignant. I have seen a benign papilloma give that same appearance. It might have been a cause of bleeding, as a papilloma in the bladder sometimes is.

The radiologist's conclusions are naturally enough withheld because they probably tell us more than we would better know at present. In the plate we see a remarkable hole in the middle of the stomach. The only thing I have ever seen at all like this was a benign pedunculated tumor inside the stomach. The pylorus and sphincter look all right. That is all that I can see.

A **Physician**: In view of his syphilitic history could we consider such a thing as a gumma?

Dr. Cabot: I do not see why it should make such a hole as that. The only syphilitic lesions that I have seen, believed to be syphilis of the stomach, have given a contracting diffuse lesion, not a hole of that sort. But it is fair to say that I have never seen a gumma of the stomach, so I don't know what it would look like in the X-ray.

The orders are mostly for cathartics, for sleep, and in relation to hemorrhage.

We have no metabolism test, so we cannot consider myxedema any further.

One pint of blood three times is a great deal of blood.

On the 18th there may have been a bronchopneumonia on the right.

They are looking for evidence of tumor metastasis and they are not finding it.

DIFFERENTIAL DIAGNOSIS

I call this a difficult case. I think we shall probably come out wrong. There are three things which have been in mind, pernicious anemia, syphilis of the central nervous system, and a tumor in the stomach.

A lot of blood came from the stomach at the end, presumably from whatever that gastric lesion was. If that had been there for some time and had been bleeding it would account for an anemia, although it should not account for the anemia here described. If the observations are correct this is not a secondary anemia.

We certainly have strong evidence of syphilis and I think I shall believe it unless there is strong evidence the other way post mortem. Was the spinal cord examined?

Dr. Richardson: No, but we examined the brain.

Dr. Cabot: Then I think I shall believe in syphilis whatever is shown, because it might have been in the cord, on the strength of the evidence we have.

The brain symptoms sound like dementia paralytica, and the same lesions which can cause that can cause an anemia, but not this type of anemia. So that I am pretty thoroughly confused as to the diagnosis. I believe he has cerebrospinal syphilis. I think he has something in the nature of a gastric tumor, which may be benign, but for all I know may be a gumma, because I have never seen one. It does not sound like cancer.

In view of all those facts what are we going to say? It is safer to make one diagnosis if we can. It might all be syphilis. On the other hand, in this clinic that is the rashest diagnosis we can make. It is almost never confirmed. The symptoms cannot all be pernicious anemia. That would not account for these appearances in the stomach. Can the symptoms be all due to a malignant disease? I think so, if we include metastasis. It might be primary in the stomach, metastasize to the brain and produce anemia by gastric bleeding.

On account of the gastric tumor I shall throw out pernicious anemia, although at first it seemed to me the most likely of all the diagnoses. It then comes down to a question between syphilis alone, tumor with metastases alone, or both. I am inclined to think it is both,—both some tumor of the stomach which looks to me more like a benign tumor than anything else I have ever seen, and syphilis of the nervous system. He died partly of the syphilis I think and partly of hemorrhage in the stomach.

We have nothing to make us think there is anything wrong in the heart, lungs, kidneys or anywhere else except the stomach, the central nervous system, and the blood.

On the whole then I make two diagnoses, both I think risky diagnoses,—syphilis of the central nervous system and a bleeding but non-cancerous tumor of the stomach.

Dr. Davis, does anything occur to you from the look of that X-ray?

Dr. Lincoln Davis: It looks like a tumor to me.

Dr. Cabot: Did you ever see an appearance like that from cancer?

Dr. Davis: No, I don't think so.

I should like to ask what jugular compression is?

Dr. Cabot: That is in relation to the dynamics of the spinal fluid, to see the effect in relation to a block. If there is block, compression does not raise the pressure in the lumbar puncture opening. If there is not a block it goes up as it does here. So it is negative as to block.

This is a very blind case and one where I expect to be wrong. Dr. Holmes, I have said that the best I can make of it is a benign tumor of the stomach wall, not a cancer.

Dr. Holmes: The obvious thing in the plate is the area of diminished density in the midportion of the stomach. That on a single plate would not necessarily mean anything. It might be gas in the stomach and pressure on the stomach; if the patient was lying down and some part of the colon pressed against it, it might force the barium out of the area and mean nothing. But we know from the fluoroscope that this was constant and remained when all pressure was removed. It might be a foreign body, a hair ball or bolus of food. If that were so it would change with the patient's position. The fact that it remained in one place within the stomach is pretty good evidence that it is not a foreign body. Then we have to interpret it as a mass of some kind adherent or in some way attached to the stomach wall. One of the things that we see most often, though it is not common, is a pedunculated tumor, and they are usually benign. In that type of tumor we usually get peristaltic waves. The tumor does not affect the wall enough to interfere with peristalsis. Malignant tumors usually have a broad base, the wall of the stomach is more or less infiltrated, and with them we do not get peristalsis. The location of this tumor is rather high. In the normal stomach we do not get peristalsis as high as that. So that the absence of peristalsis here would not mean that the stomach was infiltrated. In this particular case there was absence of peristalsis. The presence of a residue simply means that something has interfered with the emptying of the stomach. Anything that interferes with peristalsis would interfere with the emptying of the stomach. Food does not pour out of the stomach. It only goes out because of peristaltic action. That would be additional evidence that this growth does interfere with peristalsis, and also evidence of its malignancy.

I should say that we had a definite mass in the mid-portion of the stomach, probably malignant, a little more likely to be malignant than benign because of its interference with peristalsis and the emptying time of the stomach.

Dr. Cabot: I am asked if that could be a gumma?

Dr. Holmes: I don't know. We have had a small group of cases of syphilis of the stomach. I never have seen a case that was interpreted as gumma. We interpret them as syphilis of the stomach. I went over the group fairly carefully a few years ago and took out eighteen cases that we thought were syphilis of the stomach. Recently Dr. Merrill analyzed that group and cut them down to four or five that were still thought to be syphilis of the stomach. The other fourteen or thirteen turned out to be something else. So that it is evidently a pretty rare lesion. When we do get it it shows the so-called leather-bottle stomach, a general narrowing of the wall of the stomach, and as a rule they do not have stasis. I should not think this was syphilis.

X-RAY INTERPRETATION SEPTEMBER 12

Findings probably represent new growth in the wall of the stomach.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Syphilis and malignancy of stomach.
Cerebral hemorrhage?
Syphilis, tertiary stage?

DR. RICHARD C. CABOT'S DIAGNOSIS

Syphilis of the central nervous system.
Gastric tumor, probably benign, with hemorrhage.
Secondary anemia.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Embolism of the basilar artery

Anemic infarction of the pons.
Adenomatous polypi and adenocarcinoma of the stomach.

2. *Secondary or terminal lesions*

Embolism of a minute branch of the left coronary artery.
Infarcts of the spleen and kidneys.
A few areas of bronchopneumonia, right.
Wet brain.

3. *Historical landmarks*

Slight chronic pleuritis, right.
Luetic aortitis with small aneurism and mural thrombus.

Dr. Richardson: This was a very unusual case.

The pia was wet, infiltrated with thin pale clear fluid. The vessels of Willis showed a very slight amount of sclerosis in places, nothing remarkable. The basilar artery was occluded at its distal portion by a frank embolic columnar mass which was prolonged a little into the branches at its bifurcation. (See Plate II.) Practically the entire pontine tissue was softened, pasty, pale and homogeneous,—frank anemic infarction. The brain tissue generally was a little wet.

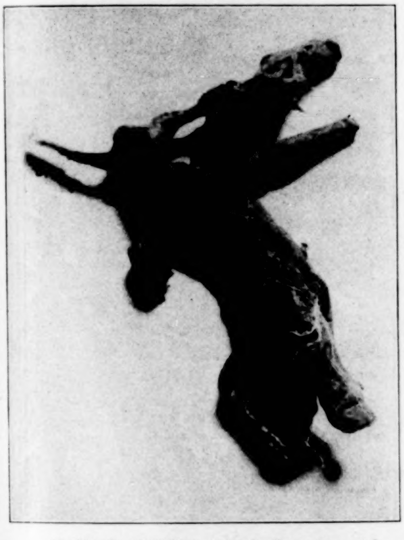


PLATE II. Embolism of the basilar artery. ×3.
Dr. Oscar Richardson.
Photograph by Louis M. Adams.

The esophagus was negative. Hanging off from the anterior wall of the stomach midway was a large adenomatous-like mass, as seen in Plate III. Macroscopically it looked like an adenoma. There were several hemorrhagic areas in the peripheral portion of the mass, and areas of ecchymosis in the mucosa of the stomach. Microscopic examination showed at one place in this adenomatous tissue a slight invasion of the wall of the stomach. That would make it of course cancerous in that portion. So we have a mass the greater portion of which is adenomatous and at one place an area of cancerous degeneration.

The intestines were negative save that they contained a little bloody mucus and blood-like material.

The lungs were negative except that on the right side at one place there were a few small areas of bronchopneumonia.

The heart weighed 370 grams, a little large, a little dilated. The aorta in the region of the ascending thoracic was the seat of a definite luetic aortitis. (See Plate IV.) One of the areas of luetic aortitis was capped by frank thrombotic material. Across from this larger area were two or three smaller ones capped with thrombotic material.

The spleen showed two or three infarcts and the kidneys showed several infarcts.

Microscopic examination of the aorta showed luetic aortitis.

Every once in a while we find mural thrombi on the aorta. Sometimes we find infarcts associated with them.

Dr. Cabot: How big was the pedicle of the stomach tumor?

Dr. Richardson: The pedicle ran along the base of the mass without much thickening of the wall underneath, and it was only at that one point microscopically that it showed carcinoma. The mass was 7 cm. x 4½ cm. x 3½ cm.

Dr. Cabot: Was the surface of it as blunt as this? It was not a papillary thing, not like a papilloma of the bladder?

Dr. Richardson: No. It did not have a small pedicle, but a pedicle running all along the base of the mass.

These adenomatous masses along the gastrointestinal tract are not uncommon. I have seen a stomach that was practically covered with them, like the knotted fringe of a shawl.

The large intestine of one of our former cases presented in the upper portion of the descending colon adenomatous masses while in the lower part of the same colon there was frank cancer.

Dr. Cabot: Is adenoma the ordinary benign tumor of the stomach?

Dr. Richardson: Adenoma, fibroma, fibrolipoma—I should say adenoma is probably the commonest.

The anatomy of the heart is beautifully shown in Plate IV. There was but little if any decrease in the orifices of the coronary arteries. In the first portion of the aorta, just above the aortic cusps, which were not invaded by the luetic process, the thrombotic caps are well shown. One cap was about one and a half cm. across and consisted of brown soft thrombotic material. The other smaller caps are apparent. The black shadow is a small aneurism. Along the aorta we can see irregular streaks and areas of thick-

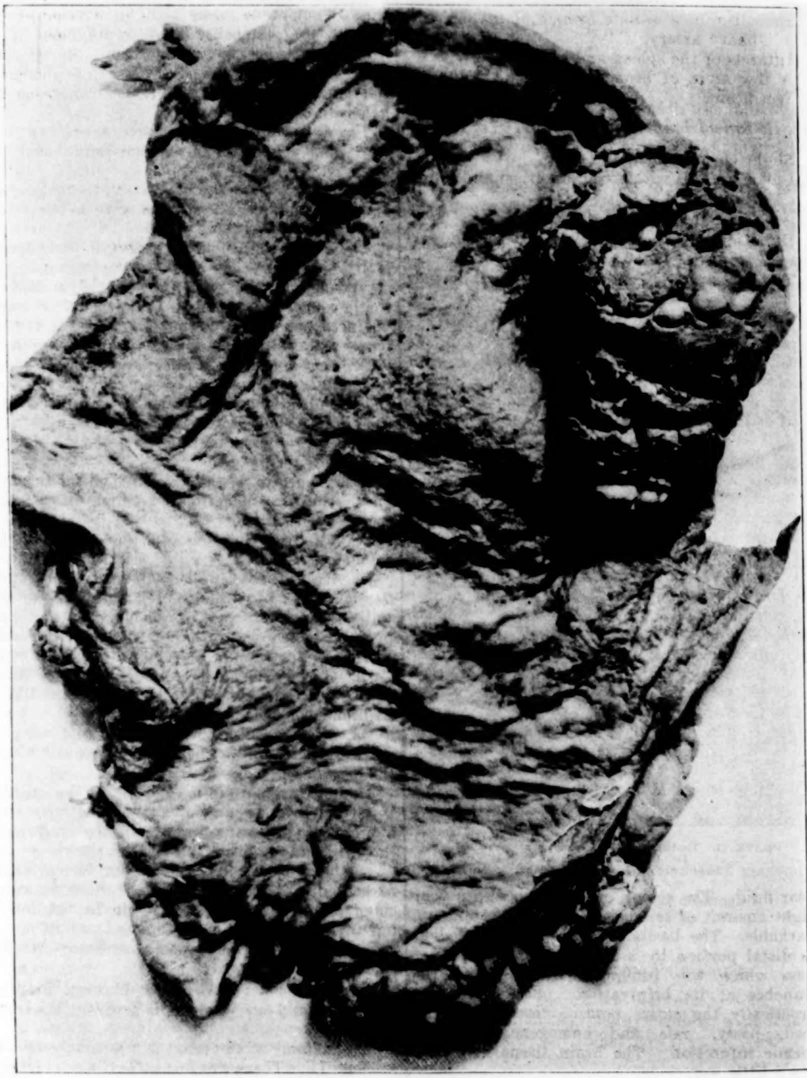


PLATE III. Adenomatous polypi of the stomach.
Dr. Oscar Richardson.
Photograph by Louis M. Adams.

ening and elevation and thinning and depression, longitudinal striation, etc., characteristic of luetic aortitis.

A Physician: We might conclude from that that the spirochetes at times are floating in the blood?

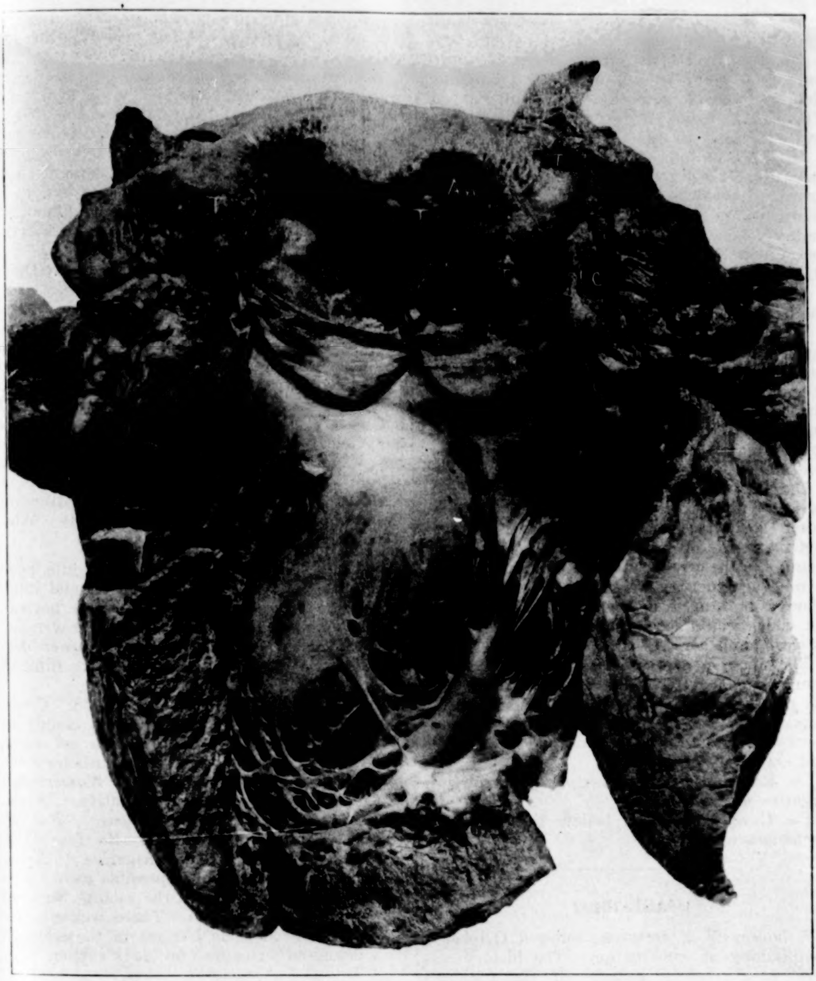


PLATE IV. Syphilitic aortitis with thrombotic masses (T, T) and a small aneurism (An). R.c., l.c., right and left coronaries.

Dr. Oscar Richardson.
Photograph by Louis M. Adams.

A Physician: Do you ever find evidence of the presence of the spirochetes?

Dr. Richardson: Once in a while. When the process is old we do not find them. But if the material was all cut up in serial sections we might find a few.

Dr. Richardson: Yes. It is or was a septicemia.

In this case then a bit of that material from the mural thrombus of the aorta was swept up into the basilar artery, shut it off, and produced anemic infarction of the pons. Then bits were swept down into the splenic and renal arteries and produced the infarcts of the spleen and kidneys. In addition to that, in speaking of the heart I forgot to mention that a very minute branch of the coronary artery was also occluded by a very minute embolus.

Dr. Lincoln Davis: I should like to ask a question. Don't you think it is extraordinary that an embolus can occlude the basilar artery? The basilar artery is larger than the two arteries that make it up.

Dr. Richardson: No. The basilar artery is larger than the vertebral arteries, but the basilar artery gives off branches and at its distal end bifurcates into two smaller arteries, and so anatomically this distal portion of the basilar is well arranged for the lodgement of an embolus, as in this case.

Dr. Davis: Have you ever had an embolus of the basilar artery before?

Dr. Richardson: I do not remember at the moment a case like this one. There are those cases where there is marked arteriosclerosis of the vessel with arteriosclerotic thrombotic occlusion at the site. We must remember that this embolus on the screen looks huge; it was of course roughly only twelve and a half mm. long, two mm. in diameter.

Dr. Cabot: I should interpret this man as having syphilis of the nervous system. I do not think Dr. Richardson would in any way contradict that. He did not examine the cord, and the changes in the cerebral arteries in a man of thirty-nine are such as we think of with syphilis. There is nothing in any of the findings brought out which would account for a spinal fluid such as was found here.

The tumor in the stomach seems to be partly benign and partly malignant, so I think we did pretty well on that. Dr. Holmes said malignant, I said benign. Did you look at the marrow? He had a great anemia and I discussed and excluded pernicious.

Dr. Richardson: The vertebral marrow was negative macroscopically.

Dr. Cabot: I do not believe there was any pernicious to it.

CASE 10492

A housewife of forty-two entered October 2 complaining of constipation. The history was very unsatisfactory because of the patient's mental condition.

F. H. One uncle had been in an insane hospital for several years.

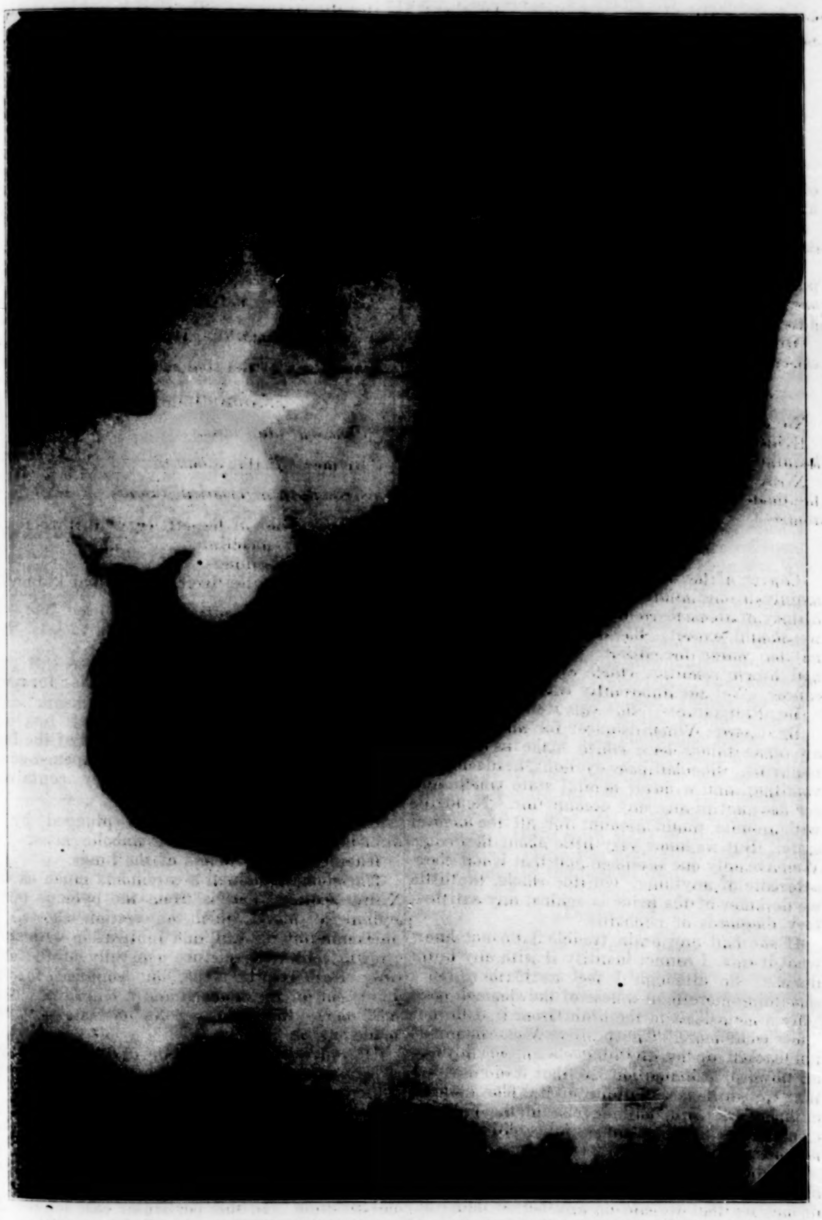
P. H. At seventeen she had a cough and hemorrhages. Her lungs were now "good and strong." Her legs swelled occasionally, especially when she was on her feet for some time. For ten or fifteen years her bowels had been constipated, requiring Epsom salts at least twice a week. Keeping her bowels open prevented bleeding and pain from hemorrhoids, which gave her great trouble. Perhaps once a month she vomited. "Her stomach was good." At present for the first time she felt very light-headed and could hardly see the questioner. In one breath she said she had been feeling perfectly well, in the next that she was sicker now than ever before. For many years she had felt a small lump in her side. In the Out-Patient Department she said that she vomited often, a brown vomitus, that she had a burning sensation in her stomach at times, and that her stools had been dark colored. All these statements she absolutely contradicted in the wards, and denied having made them.

Records of the Out-Patient Department October 1, the day before admission to the wards. X-ray films of the gall-bladder region showed irregular calcified areas in the costal cartilages, but no shadows characteristic of gall-stones. Stomach low, atonic. Peristalsis sluggish. Persistent irregular filling defect involving the antrum of the stomach over which peristalsis did not pass. Retention of almost the complete motor meal at the end of six hours. Duodenum not visualized. On physical examination a mass was felt in the region of the epigastrium or gall-bladder. Urine slightly cloudy, a trace of albumin, many red and white blood cells. Wassermann strongly positive.

P. E. A healthy appearing middle aged woman with apparently less than normal intelligence. *Heart, lungs* and *abdomen* normal. *Pelvic examination.* Third degree retroversion. *Extremities.* Marked varices of lower leg. *Pupils* normal. *Reflexes.* Knee-jerks difficult to obtain.

T. 97.5°-99.7°. *P.* 88-123. *R.* 20-28. *Urine.* Amount not recorded, sp. gr. 1.018, cloudy at the single examination, no albumin or sugar, sediment full of leucocytes (not a catheter specimen). *Blood* not recorded. One *Wassermann* strongly positive, another negative. *Stool.* Guaiac negative. *Gastric analysis. Fasting contents.* About ten ounces. No free HCl. Combined HCl 60. Guaiac negative. *X-ray* examination of the colon impossible owing to a large amount of barium in the rectum, sigmoid and throughout the colon. There was also retention of considerable barium in the stomach from examination made four days earlier.

It was learned from the patient's friends that her mental condition had been growing worse and that she did not wish to be operated upon. It was thought this might account for the discrepancies between her Out-Patient and ward histories. She was persuaded to consent to operation. She was not able to eat any solids for several days. October 9 she was in semicoma, from which she could be roused, but was not normal mentally. She complained of



Persistent irregular filling defect involving the antrum of the stomach over which peristalsis did not pass. Retention of almost the complete motor meal at the end of six hours. Duodenum not visualized.

headache and had some vomiting. October 11 she suddenly rolled over and died.

Discussion

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

It will be interesting to see if there is a patch of healed tuberculosis as there should be if this history is accurate.

I suppose the pain is in the side of the abdomen.

I should think her positive statements were probably more important than her negative ones. There is some reason, therefore, to believe that she has a gastric disease.

Ordinarily such an X-ray report as this means cancer.

NOTES ON THE PHYSICAL EXAMINATION

No mass was felt in the abdomen.

Evidently she stayed a very short time in the hospital.

X-ray shows the defect between the shadow of the duodenum and the shadow of the rest of the stomach.

DIFFERENTIAL DIAGNOSIS

Cancer of the stomach is of course the thing mainly in our minds here. We have no long history of stomach trouble such as with an ulcer we should expect. She is a little young, but not too young for cancer. She has apparently had brown vomitus, which we often see with cancer. Yet she apparently was not emaciated.

Dr. Richardson: She was well nourished.

Dr. Cabot: Which is queer for cancer. There are some things here which make us think of nephritis. She had poor eyesight, headache and vomiting, and a queer mental state which cancer does not in any way account for. Nephritis with uremia would account for all the mental state. But we know very little about the urine. We have only one specimen and that is not characteristic of anything. On the whole, the little we do know of the urine is against any satisfactory diagnosis of nephritis.

If she had any brain trouble I do not know what it was. I cannot identify it with any brain disease. So although I feel as if there were something more than cancer of the stomach, possibly a metastasis to the brain from it, I do not know what more. The positive Wassermann is not backed up by anything else in the history or physical examination, so that I do not see that we can make anything of it. The absence of knee-jerks with nothing else in the physical examination does not suffice for syphilis of the nervous system.

Practically our whole case rests on the X-ray and on a more or less dubious history. But I do not see that we can do any better than rest on that and call this cancer of the stomach.

Dr. Richardson: She died a sudden death.

Dr. Cabot: But we have no idea of what.

X-RAY INTERPRETATION

September 30. A lesion at the outlet of the stomach with considerable obstruction, perhaps malignant.

October 3. In view of the positive Wassermann the lesion at the outlet of the stomach may be of syphilitic nature. Its outlines are apparently similar and could well be associated with a lesion of that type.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinoma of the stomach.

DR. RICHARD C. CABOT'S DIAGNOSIS

Carcinoma of the stomach.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Carcinoma of the stomach.

2. *Secondary or terminal lesions*

Varicose veins of the left leg with thrombi.
Pulmonary embolism.
Edema of the lungs.
Congestion of the liver, spleen and kidneys.

3. *Historical landmarks*

Slight arteriosclerosis.
Slight chronic pleuritis, right.
Slightly defective closure of the foramen ovale.

Dr. Richardson: The varicosities of the legs were well marked on the left. We opened some of the veins low down and they contained thrombi.

The pulmonary artery was plugged by a branching, occluding frank embolic mass.

There was some edema of the lungs.

The stomach showed a carcinoma much as the X-ray showed; that is, from the pylorus up a cylindrical mass which on section showed a thickening of the wall and infiltration with new growth cells,—the picture generally of the diffuse, leather-bottle type, but confined to the lower end of the stomach and a length of seven cm. above the pylorus. No metastases were made out.

Of course the plugging up of the pulmonary artery gave congestion of the liver, spleen, and kidneys.

There was slight arteriosclerosis. The question was raised whether some of the arteriosclerosis present in certain places in the aorta was luetic or not. The question arose mainly on account of the presence of the so-called longitudinal striation. In this particular case longitudinal striation did not mean luetic aortitis.

CASE 10493

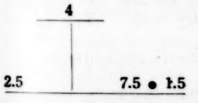
A Greek kitchen worker of sixty entered July 20 complaining of pain in the right hip and thigh of eight days' duration.

F. H. Little known.

P. H. He had always been well and strong. A month ago he weighed 185 pounds, his best and usual weight. He now weighed 145 (?).

P. I. Twenty years ago following trauma he had a similar affection of the left hip. After a few days of lameness the entire leg swelled and he was disabled for twenty-three months. Afterwards the leg became entirely well. For several winters he had had "asthma" accompanied by some unproductive evening cough and by dyspnea on exertion. In summer he was entirely well, as he had been for the past four months. A month ago he began to lose weight, more definitely two weeks ago. He attributed this to domestic upheavals. Eight days ago after a particularly hard day-night's work he had some discomfort in the right upper thigh. The next day he was unable to move rapidly because of pain on motion of the right hip. He went home, and after keeping up for a day went to bed and remained there. At first the pain, a dull aching of the upper thigh and hip, was present only on motion; he could lie quietly in some comfort. For the past two days the ache had been constant, accentuated on movement, and he had been unable to sleep.

P. E. A poorly nourished old man. Teeth all gone. Chest expansion limited. *Lungs.* Many musical râles throughout, with possibly here and there a few moist râles. Expiration prolonged. *Heart.* Apex impulse not found. Percussion measurements as shown in the diagram. Sounds of fair quality. *B. P.* not recorded. *Abdomen.* A firm tender indefinite mass, not moving with respiration, felt deep down in the right lower quadrant over Poupart's ligament. Little or no real spasm. Indirect left inguinal hernia descending well into the scrotum. Right inguinal ring patent and wide, with marked impulse, but hernial sac did not descend into scrotum. Considerable tenderness to pressure directly over Poupart's ligament on the right. Small glands. *Extremities.* Right thigh held in flexion. Motion did not cause pain except for extension. Internal and external rotation, adduction and further flexion not limited. Abduction somewhat limited. No bone tenderness. Pressure behind the great trochanter caused slight pain.



Before operation *T.* 98.6°-102.2°, *P.* 82-107, *R.* 42-30; *urine,* normal amount, sp. gr. 1.020, alkaline at the single examination, no albumin or sugar; *renal function* 35%; *blood,* hgb. 85%, leucocytes 19,800-25,800, polynuclears 68%. *Wassermann* negative. ***Sputum*** **mucopurulent.** Chains of Gram-positive diplococci resembling pneumococci. *Surgical consultant.* "Advise operation." ***Orthopedic consultant.*** **"Some limitation of hip joint motion, but believe there is some abdominal or retroperitoneal trouble as the cause."**

Orders. July 20. Soft solids. High head rest. Codeia gr. ½ by mouth every three hours p.r.n. Veronal gr. x by mouth, repeat once if necessary. Pyramidon gr. x every three hours p.r.n. July 21. Aspirin gr. xv every four hours p.r.n. Veronal gr. x by mouth, repeat once if necessary. Hot water bottle. Do not give codeia or morphia. July 22. Morphia gr. 1/6 and atropin gr. 1/120 before leaving ward.

July 23 operation was done. The patient made a poor ether recovery. He coughed somewhat during the next two days. There was profuse drainage from the wound. The temperature ranged from 97° to 100.2°, the pulse from 79 to 120. July 28 there was less cough, but the patient did not look well. August 1 there was more psoas spasm and he still kept the right leg flexed at the thigh. The general condition did not seem good. The chart was not remarkable. There was no clinical evidence of insufficient drainage August 4 the abdomen was soft. The drainage continued profuse.

August 5 the respirations rose suddenly to 36 and dyspnea was prominent. There was dullness at both bases and distant breath sounds. The patient went rapidly downhill. August 7 a medical consultant reported, "The heart is negative except for rapid rate. Lungs: dullness at both bases and low in the axillae with diminished breathing and many fine moist râles. . . . . Recommend more fluids and more sleep. Morphia gr. 1/6 s.c. sufficient for rest and sleep but not to reduce the respiratory rate below 25. Whiskey ℥ i 2 or 3 i.d. might be useful."

August 8 there were signs of right bronchopneumonia. There was cyanosis of the lips and face. That day the patient died.

DISCUSSION

BY DR. LINCOLN DAVIS

If this is correct it is a terrific loss of weight. Such a rapid loss as forty pounds in a month would suggest starvation. I should think the "domestic upheavals" must have been pretty severe to cause such a loss.

We are left entirely in the dark as to what the trauma was or how much trauma there was. I suppose he may possibly have sustained a fracture of the hip or possibly a phlebitis which cleared up after a year.

Motions in the hip joint, except for extension, did not cause pain. That would indicate that the joint itself was not involved. If there was an acute involvement of the joint we should expect that all motions in the joint would be painful.

The renal function is a little low.

There is a leucocytosis.

As the history is read the thing that occurs to one first, I think, is the possibility of some tuberculous infection, a tuberculous hip or possibly a tuberculous spine. But of course the leucocytosis is rather against that.

The orthopedic consultant did find some limitation of the movements of the hip joint, but evidently felt that the limitation was due to spasm of the muscles and that the spasm was caused by some process not in the hip joint.

Was there no X-ray?

Miss Painter: It was unsatisfactory.

Dr. Davis: I do not think the orders are of much importance here. They were evidently narcotics on account of the pain.

The diagnosis is obscure. We have a man who had had a tremendous loss of weight, although there is some question of the accuracy of the figures, and who first noticed pain in his hip when he moved. After a day or two, the pain increasing, he had to go to bed. In a day or two more the pain was constant, bothered him at night, and he had to keep his thigh flexed. There is a leucocytosis, and there is a tender mass in the right iliac fossa without much muscle spasm. It suggests an acute inflammatory condition in the right iliac fossa, possibly a psoas or iliac abscess starting in the sacroiliac joint or the spine.

I do not see why they did not persist and get another X-ray, because we should naturally think of the possibility of osteomyelitis in that region with an abscess travelling down the iliacus or psoas muscle, with spasm of those muscles inhibiting the motions of the hip. The leucocyte count would indicate that the inflammatory process was pyogenic rather than tuberculous.

What else might this suggest? I believe this case was on my own service, although I did not operate on it personally, and I rather think that I know what the diagnosis was. Might it be something in the abdominal cavity, an abscess in the right iliac fossa? The most common cause of abscess in the right iliac fossa is the appendix, but the history certainly does not suggest in any way appendicitis. There was no vomiting or pain and very little muscle spasm. The symptoms started in the hip. This is quite atypical; but of course with an abscess or tender mass in the right iliac fossa we always have to think of appendix abscess. On the left side we should think perhaps of a diverticulitis.

I will say this is a pyogenic infection of the right iliac fossa which is involving the muscles coming down to the hip joint, the abscess arising possibly from the sacroiliac joint or possibly from the appendix, probably not tuberculous.

Might it be a tumor, a sarcoma? We sometimes have sarcoma of the iliacus muscle. I have seen one or two. They are apt to have a little temperature and a good deal of pain, and the motions of the joint are limited. I should say that it should be considered. We are very much handicapped by having no X-ray, and I doubt if we can go further than that. On account of the white count, the pain and the temperature I think it is probably inflammatory rather than a tumor. So I shall say inflammatory abscess, probably arising from bone or else from an old appendix abscess.

DR. DAVIS'S PRE-OPERATIVE DIAGNOSIS

Inflammatory abscess, bone or appendix?

DIAGNOSIS OF SURGICAL CONSULTANT JULY 21

Possibly low appendix abscess.

PRE-OPERATIVE DIAGNOSIS

Tumor of the right rectus muscle.

OPERATION

Gas and ether. Lower right rectus muscle splitting incision. The intestines were found to be dilated and in the right pelvis. The cecum and ileocecal region were involved in a large inflammatory mass. The peritoneal cavity was packed off around this mass and the latter was then broken into with the finger, allowing the escape of a large amount of colon smelling pus. In breaking up this cavity a very large necrotic appendix was discovered. It was removed. Two cigarette wicks were placed to the center of the abscess cavity and the wound closed in layers in the usual manner. The condition of the patient throughout the operation was not good.

PATHOLOGICAL REPORT

Microscopical examination shows the walls of the appendix thickened by fibrosis and diffusely infiltrated with wandering cells. The fat of the mesentery is necrotic.

Subacute appendicitis.

FURTHER DISCUSSION

The pre-operative diagnosis surprises me, because I do not see why a tumor of the right rectus muscle should cause limitation of motion of the hip. The rectus is inserted into the symphysis and not into the hip. I was considering the posterior muscles, the psoas and the iliacus, but not the rectus.

I do not really believe I should have thought of an appendix in this case upon reading the history if I had not vaguely recognized it as a case on my own service. It was evidently a very obscure appendix case developing without the ordinary symptoms, which slowly developed an abscess which infiltrated into the psoas and iliacus muscle. We occasionally see that. We get a shirt-stud abscess such as we get in the palm of the hand, an abscess around the appendix, a little perforation of the fascia of the posterior abdominal wall, and the pus burrows into these posterior muscles. These are extremely bad cases to treat. Unless we get into the posterior region and get good drainage there is a lot of damage. And it is in exactly these cases that we find damage done to the ureter with urinary fistula.

The medical consultant did not apparently find any dilatation of the heart.

I do not myself put much reliance on the administration of whiskey in this kind of case.

Evidently there was a low-grade appendix abscess with involvement of the psoas muscle.

Dr. Cabot: Do you think he had a general peritonitis?

Dr. Davis: I do not believe so. I think he died of sepsis. He was an elderly man, and the drainage was poor.

A Physician: In cases over fifty years of age is the appendix history apt to be quite atypical?

Dr. Davis: I think it is. The disease is fulminating in young people; in old people it comes on insidiously.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Appendix abscess.
Bronchopneumonia.
Operation, incision and drainage of appendix abscess.

DR. LINCOLN DAVIS'S DIAGNOSIS

Appendix abscess.
Sepsis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Subacute appendicitis.)
Retroperitoneal abscess.

2. *Secondary or terminal lesions*

Purulent bronchitis, right.
Bronchopneumonia, right.
Acute pleuritis, right.
Arteriosclerosis.
Slight hypertrophy and dilatation of the heart.
Soft hyperplastic spleen.

3 *Historical landmarks*

Chronic perisplenitis.
Cholelithiasis with stone in the cystic duct.
Slight hypertrophy of the prostate.

Dr. Richardson: The pathology in this case was as follows. There was a large retroperitoneal abscess involving the psoas muscle and extending down to the right thigh. There was a ligated stump of the appendix present and intact. There was no peritonitis.

The circulatory apparatus showed slight arteriosclerosis, with slight hypertrophy and dilatation of the heart. There was a soft hyperplastic spleen, some bronchopneumonia on the right, and a purulent bronchitis.

The gall-bladder contained five stones. The cystic duct came off in the usual manner. It was rather long and about midway was obstructed by a stone. The upper part was dilated and the wall thickened. The lower part was of the usual size and negative. The gall-bladder and the rest of the biliary tract were negative.

A Physician: In regard to gall-stones, what proportion do you find with a normal mucosa?

Dr. Richardson: A small percentage, as they come here.

CURRENT LITERATURE

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Strangulated Hernia Complicated by Perforation of Afferent Loop

Watson, Leigh F. (*Southern Medical Journal*, July, 1924, xvii, pp. 531-532).

Delayed perforation of the intestine after an operation for strangulated hernia is more frequent than is generally supposed, and death from this cause is usually explained as being due to leakage around an anastamosis or to infection at the time of operation. The symptoms of perforation may not appear for several hours or days after operation. The only way to avoid this unfortunate complication is always to examine thoroughly the distended afferent loop for a distance of one to two feet beyond the point of strangulation for raw spots, ulcerated areas and minute perforations.

Suspicious patches of gut, if small, should be covered with an omental flap; if large and of doubtful viability, the loop can be brought out of the wound and treated expectantly. If the intestine is gangrenous it should be resected. When symptoms of peritonitis suddenly develop after an operation for strangulated hernia a prompt exploratory laparotomy is indicated. The rent in the intestine must be found and closed, the wound drained, and the patient placed in the Fowler position and treated for peritonitis.

Biologic Diagnosis of Pregnancy

Fink, from Winter's clinic at Königsberg, presents (*Münch. med. Woch.*, June 20, 1924) a discussion of six biologic methods for the diagnosis of pregnancy—cobra-hemolysis, antitrypsin, Kottmann, Abderhalden, Maturin, and erythrocytic. He concludes that they may all be of value, but not always.

[R. M. G.]

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PNEUMONIC PLAGUE IN LOS ANGELES

AN outbreak of this form of the plague in Los Angeles brings us face to face with the possibility that the disease may become epidemic in this country. Fortunately we have organizations, notably the U. S. Public Health Service, to protect us from such a calamity, and we are now aware of the manner in which contagion is spread.

It was not so in the distant past, when bubonic and pneumonic plague swept unchecked through the countries of Europe and Asia. History bears witness to the power and fury of the "Black Death." We are indebted to "Chicago's Health" for a succinct recital of the great epidemics of plague.

"Plague has been prevalent in various parts of the world for centuries as evidenced by the so-called pest among the Philistines described in the First Book of Samuel, Chapters 5 and 6, when the captured ark was returned with five Golden Emerods and five Golden Mice. This disease was probably the Bubonic Plague. The plague was first described about 100 A. D. by Rufus of Ephasus, who left a description of the epidemic of his time that had occurred in Libia, Egypt and Syria. In A. D. 542, in Constantinople, during the reign of Justinian, it raged so violently that 1,000 grave diggers are said to have been insufficient for the interment of the dead. It started from Egypt and ravaged Europe for 50 years. In the thirteenth century the plague was brought into Europe by the Crusaders.

"The United States has been comparatively free from the plague. The disease probably entered this country in 1899, as the first recognized case was discovered in the Chinatown district, San Francisco, in March, 1900. The United States Registration Area records but 32 deaths from this disease from 1911 to 1919. In the latter year, thirteen of the deaths are charged to California. The seaports of this state receive the ships from the Orient and thus become the potential portals of entry of unrecognized cases and infected animals, such as rats. * * *

"The plague is caused by a germ that is called the 'bacillus pestis.' It was discovered in 1894 by Doctors Yersin and Kitasato, independently. This germ grows best at the temperature of man's body. It may retain both vitality and virulence for a long time in man and rats recovered from the disease, in the bodies of animals that have died of the disease, and in the soil of an infected place."

The plague bacillus is transmitted from ground squirrels and rats to man, through the medium of the flea. It is easily killed by sunlight and by cold, but under suitable conditions of moisture and darkness, it may live outside the body for a number of weeks. Apparently the bubonic type of the disease may change to the pneumonic type. The latter is transmitted from man to man mainly in droplets of sputum. Pneumonic plague "usually begins suddenly with a rapid rise in fever, which is frequently accompanied by chills. This is followed by severe headaches, general body pains, vomiting and prostration. The lungs become involved very rapidly. The sputum is large in quantity and consists of a thin, bloody fluid loaded with the germ. Cough may be absent. Very often the physician is hardly aware that there is any serious lung trouble, and by the second day a lobar or catarrhal type of pneumonia is well established. The patient becomes cyanotic, due to the lung congestion, and dies within a few days.

"In the bubonic type, glandular enlargement with fever should be regarded with suspicion, especially in a neighborhood where there is a probability of the existence of animal carriers. Immediate bacterial examinations should be made in these cases.

"Few cases recover, the mortality being practically 100 per cent. In the present epidemic in Los Angeles, there have been 37 cases with 28 deaths so far reported."

The one great measure of prevention is the elimination of the rat. This is a problem for all—architects, engineers, householders and Boards of Health. It is incumbent upon the medical profession to keep a keen watch for isolated cases, for if contagious diseases can be detected when the first few victims are stricken, epidemics can usually be prevented.

It is probable that civilization has given us the knowledge and the organization to prevent the recurrence of plague on a large scale. We must use our knowledge and develop our organization, however, and act with directness and decision.

STUDY OF END RESULTS BY THE GENERAL PRACTITIONER

In our issue of November 6 the leading editorial dealt with the importance of the study of post mortem findings as a great feature of medical education. Recognition of the difficulties encountered in attempts to secure permission for autopsies because of lack of understanding of the wisdom of the procedure is general. These difficulties can, however, be overcome in many cases. General practitioners are not as a rule inclined to meet the sentimental objections of surviving friends with carefully thought out arguments and diplomacy and it is probable that a certain proportion do not feel enthusiastic about devoting the necessary time to the study of the end results of disease.

Those physicians who have sufficient scientific interest in pathology to make autopsies or have them made by an expert generally testify to the educational advantages of this sort of study. It may be fairly contended that the examination of the dead is one of the definite obligations of the attending physician. The benefits are not wholly restricted to scientific study, for the correct record of the causes of death are valuable not only as records but not rarely in the application of the knowledge acquired in dealing with family groups.

In order to argue logically in favor of autopsies it has been suggested that physicians should provide for a post mortem examination of their own bodies. This might disabuse the lay mind of much of the common prejudice. Information of this purpose would certainly influence the more intelligent friends of physicians. This form of post graduate study would, if generally adopted, lead to a better understanding of the symptoms of disease and more logical therapeutic efforts.

Therapeutic Column

TRYPARSAMIDE

TRYPARSAMIDE is a pentavalent arsenic compound prepared at the Rockefeller Institute of Medical Research, in the quest for a drug for the treatment of trypanosomiasis. The reports on its use for this purpose, though few in number, have been of the most encouraging nature, as they suggest that the drug leads to the sterilization of the blood and cerebrospinal fluid in a very short time and produces clinical recovery.

In 1923 a report was published by Lorenz, Loevenhart, Bleckwenn, and Hodges, on the effect of this drug in the treatment of neurosyphilis. They report both serological and clinical arrest in 100% of the cases of meningovascular syphilis. In the cases of parenchymatous syphilis, including a good many cases of general paresis, they reported 63% arrested and 15% improved. Not only was the effect on the clinical symptomatology interpreted by them as satisfactory, but they also obtained marked improvement in the spinal fluid findings.

Some months later, Moore, Robinson, and Keidel, reported their results in the treatment of neurosyphilis by tryparsamide and the findings were almost identical with those of their predecessors as regards the spinal fluid improvement and clinical effects. Results as favorable as these had not been reported previously as following the use of any other drug. Subsequent to the satisfactory results obtained by the two above-mentioned groups of workers, the Rockefeller Institute released the drug to a number of clinics in various parts of the country, including the Psychopathic Hospital and the Massachusetts General Hospital in Boston.

At the meetings of the American Neurological Association and the American Medical Association in the spring of 1924, several more reports of tryparsamide in the treatment of neurosyphilis were presented, including those of Schwab of St. Louis, Stokes of the Mayo Clinic, Wile of the University of Michigan Clinic, Ebaugh of Phliadelphia, Solomon and Viets of Boston, and a second report by Moore. It was practically unanimously agreed that the drug was effective and in many instances gave brilliant clinical and serological recoveries in cases of neurosyphilis.

Our own personal experience has been quite satisfactory. In many cases of paresis and tabes we have obtained results that seemed quite impressive. Improvement of patients' conditions was frequently observed after treatment with arsphenamine had failed to produce anything that we considered as satisfactory. Of course we have many failures also to report, and we believe that tryparsamide will not entirely displace intraspinal, intracisternal, and intraventricular therapy in the treatment of neurosyphilis, but there seems little doubt but that it will take its place as one of the very important drugs in the treatment of these conditions.

The work of Moore, Robinson, and Keidel brought out one very important point, namely, that tryparsamide has very little, if any, spirochetal action in early syphilis, and that it was by no means as effective in primary and secondary syphilis as the arsphenamines. They strongly advise against the use of tryparsamide in early syphilis. It is very interesting to contrast the very beneficial results of tryparsamide in the treatment of late syphilis of the nervous system with the unsatisfactory results in the treatment of early generalized syphilis. An explanation of its apparent value in the former group of cases is not readily forthcoming. From the result of chemical analysis, it has been stated that its penetrability into the cerebrospinal fluid is much greater than is that of arsphenamine, which may be one factor in explaining its effects. Another point is that it apparently improves the metabolism as the patients all gain in weight, as well as developing a feeling of well-being when the drug is given. It may be that a large part of its favorable action is due to raising the general immunity of the patient.

There is one very important drawback in the use of this drug and that is its tendency to produce amblyopia. Like atoxyl, to which it is chemically related, it has a tendency to affect the optic nerve. In from 2 to 5% of the patients given tryparsamide, visual disturbances occur. The majority of these regain their vision when tryparsamide is discontinued. However, in a small number the defect is permanent and in a very few cases the effect may be quite marked. This is a distinct handicap in the use of this preparation and means that it should not be used carelessly but only with due consideration of the gravity of the condition which one is combatting and with the utmost watchfulness to prevent the continued use of the drug when visual symptoms occur.

A great advantage of the drug is the simplicity of its use. It is an easily soluble powder which does not deteriorate when exposed to the air. It is relatively non-irritating even when given subcutaneously, although its usual mode of administration is intravenously. It causes practically no unpleasant reactions as do the arsphenamines, and when its effects are satisfactory, it obviates the necessity of the more complicated and more uncomfortable subarachnoid injections.

H. C. Solomon, M. D.,
270 Commonwealth Ave.,
Boston, Mass.

MISCELLANY

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Diseases Reported for the Week Ending November 15, 1924

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Anterior poliomyelitis	7	Epidemic cerebrospinal meningitis	2
Anthrax	1	German measles	8
Chickenpox	222	Gonorrhea	85
Diphtheria	158	Influenza	10
Dog-bite requiring anti-rabic treatment	6	Measles	80
		Mumps	92
Dysentery	1	Ophthalmia neonatorum	35
Encephalitis lethargica	1	Pellagra	1
Pneumonia, lobar	92	Trachoma	2
Scarlet fever	241	Tuberculosis, pulmonary	92
Septic sore throat	1	Tuberculosis, other forms	17
Syphilis	36	Typhoid fever	9
Tetanus	1	Whooping cough	82
Suppurative conjunctivitis	16		

RHODE ISLAND STATE BOARD OF HEALTH

Contagious Diseases Reported from October 18 to November 8, 1924

Week Ending October 18

Diphtheria

Central Falls	1
Pawtucket	5
Providence	4
Cumberland	1
Jamestown	3
North Smithfield	1
Smithfield	1
Woonsocket	1

Whooping Cough

Providence	1

Scarlet Fever

Pawtucket	2
Providence	5
Scituate	1
South Kingstown	1

Chickenpox

Providence	3

Poliomyelitis

Providence	1

Week Ending October 25

Diphtheria

Cranston	1
Newport	4
Providence	6
Pawtucket	1
Woonsocket	1
Cumberland	1
Johnston	1
North Smithfield	1
Warwick	1

Scarlet Fever

Cranston	2
Pawtucket	3
Providence	4
Woonsocket	1
Jamestown	1
Lincoln	2

Typhoid Fever

Providence	2

Whooping Cough

Providence	2

Measles

Providence	2

Ophthalmia Neonatorum

East Providence	1

Week Ending November 1

Diphtheria

Cranston	1
Newport	3
Pawtucket	5
Providence	6
Woonsocket	1
Barrington	1
Burrillville	1
Lincoln	2

Measles

Providence	1
Warren	1

Typhoid Fever

Providence	2

Scarlet Fever

Cranston	3
Newport	1
Providence	4
Woonsocket	1
East Greenwich	1
East Providence	1
Johnston	1
Lincoln	1
Smithfield	1
Warren	1

Chickenpox

Providence	2

Pneumonia

Cranston	1

Week Ending November 8

Diphtheria

Newport	3
Providence	8
Narragansett	1

Typhoid Fever

Providence	1
Barrington	1

Mumps

Charlestown	2

Scarlet Fever

Pawtucket	5
Providence	6
Bristol	1
East Providence	2
Middletown	1
North Smithfield	1

Whooping Cough

Providence	4

Poliomyelitis

Providence	2

Chickenpox

Providence	10

Pneumonia

Providence	1

CONNECTICUT DEPARTMENT OF HEALTH

Morbidity Report for the Week Ending November 15, 1924

(Including all cases reported before 11 A. M., Monday, November 17, 1924)

Diphtheria

Fairfield County	
Bridgeport	10
Danbury (C)	1
Fairfield	2
Norwalk	1
Stratford	6
Westport	4
Hartford County	
Berlin	1
Canton	1
Hartford	2
New Britain	5
Simsbury	3
Southington	1
Litchfield County	
Washington	5
New Haven County	
Ansonia	1
East Haven	1
Madison	1
Meriden (C)	1
Waterbury	5
New London County	
New London	1
North Stonington	1
Norwich (T)	2
Tolland County	
Mansfield	1
	—
State total	56
Last week	67

The following diphtheria bacilli carriers were reported:

Branford	2
Hartford	1
Madison	4
New Britain	1
New Haven	2
New London	1
Norwich	1
Tolland	2
Washington	1
Waterbury	8

Typhoid Fever

Hartford County	
Hartford	1
New Haven County	
Madison	1
New Haven	1
	—
State total	3
Last week	2

Scarlet Fever

Fairfield County	
Bridgeport	5
Danbury (C)	1
Danbury (T)	1
Norwalk	1
Ridgefield	2
Shelton	3
Stamford (C)	3
Westport	2
Hartford County	
Bristol	2
Enfield	1
Farmington	1
Hartford	2
Manchester	1
New Britain	8
Litchfield County	
Barkhamsted	1
Kent	1
Litchfield	1
Thomaston	11
Middlesex County	
Cromwell	7
East Hampton	2
Portland	1
New Haven County	
Guilford	1
Hamden	1
Madison	1
New Haven	14
Orange	1
Seymour	1
West Haven	1
New London County	
Groton (B)	1
New London	2
Norwich (C)	1
Preston	1
Tolland County	
Mansfield	1
Windham County	
Putnam (C)	2
Thompson	2
Windham	1
Woodstock	1
	—
State total	89
Last week	110

Measles

Fairfield County	
Bridgeport	1
Norwalk	1
Shelton	1
Stratford	1
Hartford County	
Hartford	1
New Haven County	
New Haven	3
Seymour	3
	—
State total	11
Last week	5

Whooping Cough

Fairfield County	
Greenwich	9
Ridgefield	6
Shelton	3
Stamford (C)	2
Stratford	2
Hartford County	
East Hartford	3
Hartford	2
Southington	1
West Hartford	1
New Haven County	
Cheshire	9
Hamden	5
New Haven	22
North Haven	1
Waterbury	2
West Haven	1
New London County	
Groton (B)	7
New London	8
Windham County	
Canterbury	1
Chaplin	2
	—
State total	87
Last week	93

Other Communicable Diseases

Cerebrospinal men.	1
Chickenpox	67
Conjunctivitis inf.	1
Ophthalmia neo.	1
German measles	4
Influenza	4
Mumps	15
Paratyphoid fever	1
Pneumonia (lobar)	33
Poliomyelitis	1
Septic sore throat	3
Tuberculosis (pul.)	39
" (other forms)	2
Chancroid	2
Gonorrhea	39
Syphilis	34

THE GORGAS MEMORIAL

During the past year, throughout the United States, the work of organizing the Gorgas Memorial State Governing Committees has been progressing. In some states the response has been most enthusiastic, while in others considerable effort has been necessary to bring home to the doctors the importance of this movement to them, individually and collectively. Inasmuch as the Gorgas Memorial is primarily a medical movement and as such must have the united support of the profession if it is to make the proper impression on the general public, we take this occasion to outline briefly the Gorgas plan and to request the coöperation of our colleagues in bringing to a successful issue, this national health program.

We are planning to establish a Memorial for our former chief, Major-General William Crawford Gorgas, not of marble or bronze, but a permanent living organization in the form of a great health foundation typical of his work in research and curative medicine, that will unite laymen and doctors in an intelligent effort to obtain better personal health—a health guild that will be supported and directed by the representatives of curative medicine.

The Gorgas Memorial consists of two phases:

1. An Institute in Panama for research in tropical diseases.
2. A health educational program in the United States and other countries that wish to coöperate and participate in the movement.

We are living in an age when people are knocking at all doors of knowledge and demanding that they be admitted. In the field of medicine who are so well fitted to meet this demand as those actually engaged in the practice of medicine? The doctors have a far more interesting and important message to deliver than any other group.

In the United States today there is scarcely a community that has not its quota of irregular "medical practitioners," so called. In many states there are strong oranizations of the representatives of the various cults, whose theories are imposed upon an uninformed public. Public ignorance is encouraged by professional reticence and the result is the astounding growth of unscientific methods. If the profession is to maintain the high standing to which centuries of labor in behalf of suffering mankind entitles it, it is essential that a definite organized effort be made to familiarize the public with such facts as will impress upon it the importance of medicine's contributions to human welfare. A constant fund of proper health information through the newspapers, magazines, lectures, moving pictures and the radio, furnished by medical men and women of known reputation and standing, will direct the public to the proper source for medical advice and gradually eliminate the irregular practices constantly increasing.

One of the objects of the Gorgas Memorial is to furnish a channel through which this kind of information may be disseminated. It cannot be done by individual physicians. It must be conducted by a dignified, ethical organization, controlled by the medical profession. The name of Gorgas is synonymous with "better health." No more appropriate name could be adopted for a movement that has for its object, *the development of coöperation between the public and scientific medicine for the purpose of improving health conditions by implanting the idea in the mind of every individual that scientific medicine is the real authority in all health matters and as such should be recognized as the source of health instruction.*

Before we ask the public for financial and moral support, it is essential that the doctors of the country unite in support of this program. As a means to this end, Governing Committees are now in process of organization, on the basis of 100 members to every 1,000,000 population in each state; 75% of the personnel of each Committee will consist of medical men and 25% of influential laymen and women. The permanent activities of the organization will be supervised by these Committees in their respective states, in coöperation with the National Executive Committees.

An organization cannot operate without funds. We are endeavoring to raise an Endowment of $5,000,000, the interest only of which will be utilized to carry on the work. The principal will be invested in trust securities and remain intact. None of the money thus obtained will be spent for buildings or equipment. The Republic of Panama has donated the site and guaranteed the initial buildings and equipment for the tropical research laboratories, in recognition of Gorgas' great work in Panama. Those invited to serve as Founder members of the State Governing Committees are requested, as they accept membership on the Committee, to subscribe $100 to the Endowment Fund, payable within two years. Every individual on the State Committee is a contributing member. When the medical nucleus of the organization is complete, a general appeal for funds will be made to the public.

The American Medical Association, at its recent meeting in Chicago, passed the following resolution:

"*Resolved*: That the House of Delegates of the American Medical Association, convinced of the great promise which the Gorgas Memorial contains of benefit to humanity through improved knowledge of preventive medicine and tropical disease, and of its peculiar adequacy, as a tribute to our great leader and sanitarian, recommend to the organized profession of the country, through its constituent state and county societies, the enthusisatic support of the project."

J. A. Witherspoon, *Tennessee*
Joseph Rilus Eastman, *Indiana*
Thomas Cullen, *Maryland*
W. H. Mayer, *Pennsylvania*
F. B. Lund, *Massachusetts*

The Memorial has also been endorsed by numerous other medical and civic organizations.

Every doctor is requested to take a personal interest in the Gorgas program and to see that his community is adequately represented on the State Governing Committee. Each County Society should appoint officially at least one of its members to serve on the State Committee. This is one foundation that is controlled by the practitioners of curative medicine and as such should be supported by every practicing physician. Let us pull together, "the doctor for the doctor."

Frank Billings
Gilbert Fitz-Patrick
Seale Harris
W. H. G. Logan
Samuel J. Mixter
G. H. de Schweinitz
Rear Admiral E. R. Stitt
George Crile
William D. Haggard
Franklin Martin
William J. Mayo
Stuart McGuire
Ernst A. Sommer
Ray Lyman Wilbur
Surgeon-General Hugh S. Cumming
Major-General Merritte W. Ireland
C. Jeff Miller
Brigadier-General Robert E. Noble
George David Stewart
Hugh Young
Medical Members, Board of Directors,
Gorgas Memorial Institute.
Executive Offices: Chicago, Illinois.

Officers and lay members, Board of Directors:

President Calvin Coolidge, Honorary President; Franklin Martin, Vice-President; George M. Reynolds, Treasurer; W. J. Sennett, Assistant Treasurer; Silas Strawn, Attorney; Honorable R. J. Alfaro, Brigadier-General Charles G. Dawes, Bernard Baruch, Tyson Dines, Samuel Gompers, W. P. G. Harding, Judge John Bassett Moore, Adolph S. Ochs, President Beliasario Porras, Panama; Leo S. Rowe, Fred W. Upham.

REVIEW OF PROF. A. V. HILL'S ADDRESS AT HARVARD MEDICAL SCHOOL

On Thursday, Nov. 20th, Dr. Hill, Professor of Physiology at University College, London, delivered an address at Harvard Medical School on "The Recovery Process after Muscular Activity."

As an introduction to his own experiments on human subjects, he reviewed the earlier work on muscle done by Fletcher and Hopkins and other investigators. They had demonstrated that lactic acid is produced during muscular contraction, that the amount produced is proportional to the amount of contraction and also to the quantity of heat liberated during the process. They found also that the concentration of lactic acid in a muscle diminishes when oxygen is available, that the muscle recovers its contractibility as the lactic acid disappears, and that the rate at which a muscle recovers depends upon the speed of diffusion of oxygen into it.

Two stages of heat production are associated with muscular contraction. The initial stage, or the heat produced during the contractile process, has been shown to be entirely nonoxidative in character. It may arise from the formation of lactic acid from glycogen. On the other hand the heat liberated during the recovery process is entirely dependent on the presence of oxygen. The lactic acid is not all oxidized, however. About one-fifth is oxidized to water and carbon dioxide, whereas the rest reappears in the muscle as glycogen.

As a result of exercise, the muscles require an additional supply of oxygen to complete the recovery process. With moderate exercise there is a rapid rise of the oxygen intake at the beginning. It soon reaches a maximum level at which it remains until the exercise is discontinued. Then it returns to the normal intake about as quickly as it rose to a maximum. Under such conditions the recovery is keeping pace with the breakdown and the exercise may be prolonged for hours.

With more violent exercise, no such adjustment is possible. The recovery process lags behind the breakdown, so that lactic acid accumulates, the oxygen debt mounts, and complete fatigue results. As in moderate exercise, the oxygen intake falls rapidly when the exercise is stopped. However, it does not fall to normal but remains fifty per cent above normal, for as much as seventy or eighty minutes. This fact, that the oxygen necessary for recovery may be taken after the exercise is over, makes severe muscular effort possible.

The significance of the respiratory quotient is somewhat modified in the light of these observations. The R. Q. rises with the production of lactic acid during exercise, not only because carbohydrates are being oxidized, but also because lactates are being formed with the displacement of carbon dioxide from the carbonates present. While recovery is in progress, the R. Q. falls below normal and may remain below as much as an hour, because the reverse chemical process is going on, viz., the disappearance of the lactates and the formation of carbonates. Thus there is danger in drawing conclusions from the R. Q. in metabolism experiments, unless one is sure of the constancy of lactic acid in the body.

Another factor influences the respiratory quotient in prolonged exercise. It has been found that the extra oxygen used and the extra carbon dioxide produced, are equal for a brief period of exercise, indicating that carbohydrates alone have been utilized. When the muscular activity is continued for a longer time, however, the relative amount of carbon dioxide decreases. Dr. Hill is of the opinion that this change is due to the conversion of fats into carbohydrates. This conversion requires extra oxygen and consequently lowers the R. Q. His view is supported by the similar effects he obtained, when he placed his subject on a carbohydrate-free diet for several days prior to the test.

A WORTHY CASE

A reputable physician and his wife have been discovered living in extreme poverty. The doctor is ill. Kind-hearted medical friends are trying to relieve the immediate distress. This poverty is the result of unfortunate investments and the doctor's physical condition will not enable him to again earn his living. These unfortunate people are not asking for charity and would undergo physical and mental suffering rather than appeal for aid.

A very prominent member of the Massachusetts Medical Society, familiar with the circumstances, has brought this matter to our attention. He is providing immediate care.

We suggest that contributors for the relief of these sufferers be forwarded to the Journal. We will have these contributions sent to the doctor who is now in charge of relief plans. Almost every member of the Society could give something.

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NEWS ITEMS

MIDDLESEX EAST TO CELEBRATE ITS SEVENTY-FIFTH ANNIVERSARY

Editor, the Boston Medical and Surgical Journal:

The Middlesex East District Medical Society plans a celebration of its 75th anniversary which will occur in October 1925. At a meeting at the Harvard Club, Nov. 19th, Dr. Small, our president, appointed a committee to take charge of the celebration consisting of Dr. D. C. Dennett of Winchester, Chairman, Drs. C. R. Henderson of Reading, Geo. W. Nickerson of

Stoneham, Chas. E. Montague and Richard Dutton, both of Wakefield.

Yours very truly,
ALLEN R. CUNNINGHAM, *Secretary*
November 24, 1924.

REMOVALS

DR. SUMNER COOLIDGE's present address is Plymouth, c/o E. P. Blake, 27 Freemont St.

DR. EMILY A. PRATT has moved from Staten Island, N. Y., to Albany in the same state. She is in the Medical Inspection Bureau of the State Department of Education.

DR. PATRICK J. FLEMING of Cambridge has moved from Huron Ave. to 88 Sparks St.

DR. GEORGE S. WHITESIDE has moved from New Haven, Conn., to Pittsburg, Pa., where his address is 316 Fourth Ave.

DR. MARY T. MULDOON has moved from Somerville to Waverley, P. O. Box 6.

DR. LEON E. WHITE, JR., of Brookline now has an office at 390 Commonwealth Ave., Boston.

DR. W. D. RUSTON of West Somerville has moved his office to 20 Commonwealth Ave., Boston.

RECENT DEATHS

JOHN MARSHALL WILLOUGHBY FARNHAM, a Fellow of The Massachusetts Medical Society, died at his home in Worcester, November 26, 1924, aged 56.

Dr. Farnham was born in Newton in 1868, was a graduate of Amherst in the class of 1891 and of Harvard Medical School in 1895. He settled in Worcester and became surgeon to the Worcester City Hospital besides being a pioneer in the use of the X-ray in surgery in that city. He was a member of the American Medical Association.

DR. WALTER ELMORE FERNALD, the eminent head of the Massachusetts School for the Feeble Minded at Waverley, died of pneumonia at the school, on Thanksgiving Day, November 27, 1924, at the age of sixty-five.

DR. ANDREW THADDEUS BARSTOW, who had recently closed his Boston office because of ill-health, died at the home of his wife's parents, in Templeton, November 29, 1924, at the age of fifty-one.

He was born in Jefferson, Me., December 12, 1872, took his M. D. at Tufts College Medical School in 1906, served as house officer at the Burbank Hospital, Fitchburg, and practiced surgery in Boston. He was a member of the American Medical Association, the Massachusetts Medical Society and of St. John's Lodge, A. F. and A. M., of Boston.

He is survived by his widow who is a daughter of Mr. and Mrs. Edward F. Scollay.

NOTICES

A PHYSIOLOGICAL conference will be held Wednesday, Dec. 10, at the Bowditch Library, Building C, Harvard Medical School, at 4 P. M. Title: Function in Transplanted Limbs. Speaker: Dr. S. R. Detwiler.

BOSTON CITY HOSPITAL CLINICAL MEETING DECEMBER 5, 1924, 8.15 P. M.

CHEEVER AMPHITHEATRE

Fungus Infections of Skin, J. G. Downing; Congelation dermatitis, T. W. Thorndike; Gumma of scalp with perforation through parietal bone, W. T. Garfield; Treatment of Tinea Trichophytosin by Kromayer lamp, M. C. Von Groll; Treatment of syphilis with bismuth, W. P. Boardman; Syphilitic bursitis, B. Appel. Physicians, Medical Students and Nurses invited. Refreshments.

J. J. DOWLING, *Superintendent*

THE Tenth Annual Meeting of the Radiological Society of North America will be held December 8, 9, 10, 11, 12, 1924, at Kansas City, Missouri.

CONFERENCE ON MENTAL HYGIENE AND EDUCATION

THE public is cordially invited to attend a Conference on Mental Hygiene and Education to be given by the Massachusetts Society for Mental Hygiene at the Gardner Auditorium, State House, Boston, Friday and Saturday, December 5 and 6, 1924.

FIVE SEPARATE SESSIONS

Friday afternoon, Dec. 5, 2.30 P. M. Subject: Mental Health Problems of Pre-School and Kindergarten Ages.

Friday evening, Dec. 5, 8 P. M. Subject: Intellectual and Emotional Problems of the Grammar School Age.

Saturday morning, Dec. 6, 10 A. M. Subject: Problems of Adolescence and the High School Age.

Saturday afternoon, Dec. 6, 2.30 P. M. A Demonstration Clinic.

Saturday evening, Dec. 6, 8 P. M. Subject: Mental Hygiene of the College Student.

Teachers, Educators and Parents will be especially interested in the problems discussed. Admission Free.

NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY

A meeting of the New England Otological and Laryngological Society will be held on Thursday, December 11, 1924, at the Boston Medical Library, 8 the Fenway, at 8.30 P. M.

The speaker of the evening will be Prof. G. H. Parker, Director of the Zoölogical Laboratory of Harvard University. Subject: The Development of the Ear in Lower Animals. Discussion opened by Harris P. Mosher, M. D.

D. Harold Walker, M. D., *President*
John H. Blodgett, M. D.
Secretary
390 Commonwealth Ave.

CORRESPONDENCE

CRITICISM OF A BOOK REVIEW

Ouse Lea, York, England.
7th November, 1924.

Mr. Editor:

In your issue of October 2nd appeared a review of Mr. F. M. Alexander's book "Constructive Conscious Control of the Individual," and although transmission of your Journal to this country, our elections, and other things have caused delay, I trust that you will, nevertheless, give me space to comment upon the review, as I would like to urge upon the medical profession a quite different view of the book from that which your reviewer gives.

The review is calculated to discourage medical men from taking an interest either in the book or in Mr. Alexander's work, or, at any rate, to delay the interest which, sooner or later, they are bound to take in it. In complete disagreement with your reviewer, I regard this book and Mr. Alexander's work as quite the biggest thing in the evolution of medicine since the days of Pasteur; and the fact that Alexander's lines are quite different from those of Pasteur makes it none the less important. For while Pasteur's work, on its preventive side, aimed at the prevention of access to the individual of the infection of germ-conveyed disease, and at the destruction from without, so to speak, of the infectious germ after it had gained access, Alexander's aims include the building-up of a physique which will make the body of the individual resistant to disease, both infectious and non-infectious, and so will tend to prevent the establishment of a diseased condition, and also to make the body better able to throw off disease which has already gained a footing.

With some of what the reviewer says I cannot disagree. When he says the "whole of the book is vague, prolix, and with many repetitions"—although I do not care for his grammar, I must admit that he is not without some justification. This vagueness, however, may be inherent in the subject; and all that it implies may be that, whereas in the written word the sense which conveys the message from the brain of the writer to the brain of the reader is that of hearing with the sense of sight playing a subsidiary part, Alexander's work is mainly concerned, so far at least as the senses are involved, with the sense of muscular output (what Bain calls the muscular sense), and messages through this sense cannot be readily conveyed by the written word; neither can they be drawn or pictured. So neither the sense of sight, nor the sense of hearing, nor both together, can convey them in their entirety; and, accordingly, words about them may be bound to be vague.

The very vagueness of this sentence affords an instance of the difficulties inherent in the subject.

The reviewer himself is, however, the last person who should bring a charge of vagueness. What is "sensory *material*"? I do not know. I am convinced Alexander does not know, and I am positive that the reviewer has no idea of what the words mean, or of what he imagines his readers may take him to mean.

This is only one instance; but nearly every sentence conveys an implication of confusion of thought, as when he seems to imply that Alexander states that a Phobia is "caused by a condition of debauched kinaesthesia." Alexander does relate Phobias to the presence of debauched kinaesthesia as a contributing factor, which is quite a different thing.

My object, however, is not to score off a stupid review, but to interest doctors in Alexander and his work, and if I can do this I have no fear about their interesting others; and my chief complaint against the reviewer is that he has set out, with conspicuous want of success, to score off Alexander, and has not attempted in his review, as might have been reasonably expected, to give Alexander's main theses. Of these the chief are three:

1. That man generally continues to rely on instinctive control of his psycho-physical mechanism, and that whereas this was right in the stable environment in which man passed his primitive life, it is wrong in the unstable and rapidly changing environment of civilization.

2. That from this arises a general incoördination to which can be assigned as cause most of the ills his flesh is heir to.

Space, of course, does not permit of proof of this, but two examples affording presumptive proof can be given:

(a) In the relatively psychic sphere,—the stranger nation is an enemy, and the assumption is accepted without thought that the advantage of the stranger nation is the disadvantage of our own: hence come wars, and tariffs, and other absurdities; for whereas in the million or so years of the life of man on this planet, during the first 999,000 of them or so, the stranger was the enemy and as such he was rightly killed as a general preventive measure; in these latter times the disadvantage of one nation means the disadvantage of all the rest, and vice versa.

(b) In the relatively physical sphere,—any casual observation will make evident to the reviewer that of his friends over 50 years of age, most have a stoop, and there are few of them who have not a waist girth as large as, or larger than, their chest girth. This is certainly true of people in this country and in Germany and France from my own observation, and I have no doubt that it is also true in America; and it is true because man has no conscious knowledge of the use of the mechanism concerned with what—for want of a better word—we call posture, but he relies upon the instinctive control which he learnt as primeval man, when the dominant factor in his life was fear.

I personally believe that this universal truth, and the incoördination of which it is one manifestation, is not the result of old age, but one of the causes of it.

3. That associated with this lack of coördination is a debauched sensory appreciation, and this sets up a vicious circle: lack of coördination interferes with correct sensory appreciation, and incorrect sensory appreciation promotes further incoördination.

Again, there is no space for proof, but I suggest the following observation: In the course of my work as an ophthalmic surgeon I continually ask my patients to look at my right ear. They practically never fail to look at my left! So also when we ask our patients to lie on their back, it is at least an even chance that they will turn face down.

When this sort of thing is multiplied, as in life it is multiplied, and the result is integrated, can we

wonder that we find so many bodies distorted and diseased, or can we expect that the world shall be in any other than its present state of chaos when not only alleged statesmen but clergymen, lawyers, trade union leaders, soldiers, sailors, tinkers, tailors, and (let me whisper it!) doctors function throughout their various activities, some of which may be of world importance, and yet it is impossible to rely with certainty that any one of them will at any moment accurately and precisely know his right hand from his left?

Your reviewer concludes with the paragraph:

"The eulogies of this book have emanated principally from philosophers, arm-chair psychologists, historians and educators—not one, so far as the reviewer knows, from a trained individual in psychopathology or physiology, the two fields with which it is chiefly concerned."

I include myself in neither the one class nor the other, but I am a medical man, and, I hope, a practical medical man, of long and varied experience; and whereas Alexander's theses would have commended themselves to me *a priori* from intellectual considerations only, my practical experience of his work in the case of myself and others enables me to say without hesitation that it well merits careful investigation by the medical profession, despite all the cold water your reviewer throws on it.

Yours faithfully,

Peter Macdonald, M.D.

SERIES OF MEETINGS FOR THE MEDICAL RESERVE OFFICERS

November 18, 1924.

Dr. Walter L. Burrage,
182 Walnut Street, Brookline, Mass.

My dear Doctor Burrage:

Thank you very much for sending me the Directory of Officers and Fellows of the Massachusetts Medical Society. It is of immense help to me in my work here.

We are planning a series of meetings for Reserve Medical Officers, to be held at the Medical Library, and I am enclosing the notice. I very much desire to have this published in the Boston Medical and Surgical Journal. I do not know whether this is possible without expense or not.

The notice would reach a number of Reserve Officers that are not assigned or attached to units, who, we feel, might like to attend.

Thanking you for your assistance in the Reserve work, I am,

Sincerely yours,

Henry S. Beckford,
Major, M.C. USA. (DOL).

As a part of the winter training of the Medical Reserve Officers there will be held a series of meetings at the Boston Medical Library, 8 The Fenway, with schedules as follows:

November 26 and December 10, 1924; January 7, January 28, February 11, March 4, March 18 and April 1, 1925.

The program at the November 26 meeting will consist of short addresses by Colonel Joseph H. Ford, M.C. USA., Corps Surgeon, First Corps Area, on "The Intermediate and S. O. S. Medical Units"; Colonel George F. Keenan, Med-ORC, Corps Surgeon, XI Corps, "The Medical Reserve Officer"; Colonel Alexander S. Begg, Med-ORC, Commanding Officer, 341st Medical Regiment, "The Medical Regiment"; Major Henry S. Beckford, M.C. USA., Executive, Medical Reserve Units, Line Medical Units, "Problem of Map XI Corps That Will Be Used This Winter."

All Reserve Medical Officers who are assigned or attached to units are urged to attend these meetings, as the work will cover all units, viz., Base, Evacuation, Station and Surgical Hospitals, Hospital Trains, in fact every medical unit will have some part in the problems.

The program of the December 10 and other meetings will be announced later.

It is hoped that as many Reserve Officers as possible will attend these meetings.

SOCIETY MEETINGS

Essex North District Medical Society

January 7, 1925. Semi-annual meeting at Haverhill.
May 6, 1925. Annual meeting at Lawrence.

Essex South District Medical Society

Essex South District Medical Society's next meeting will be held Wednesday, December 3, at the Beverly Hospital. 5 P. M., clinic by members of the Staff. 7 P. M., supper. Speaker, Dr. John Homans, Boston, on "The Early Diagnosis of Carcinoma of the Large Intestine."

Franklin District Medical Society

The meetings of the Franklin District Medical Society will be held on the second Tuesday of January, March and May.

Hampden District Medical Society

Meetings to be held on the third Tuesday of January and the third Tuesday in April.

Hampshire District Medical Society

The meetings will be held the second Wednesday of November, January, March and May.

Middlesex East District Medical Society

Wednesday, January 21. Harvard Club. Dr. Franklin K White, "Diagnosis of Gall-Bladder Disease."

Wednesday, March 18. Harvard Club. Dr. John H. Cunningham, "Urinary Retention: Its Significance and Treatment."

Wednesday, April 15. Harvard Club.

Wednesday, May 13. Colonial Inn, North Reading.

Middlesex North District Medical Society

January 28, 1925.
April 29, 1925.

Middlesex South District Medical Society

Winter Schedule—The plans for winter meetings of the Society include the stated meetings in October and April, two hospital meetings, and five meetings to be held in conjunction with the Suffolk District Medical Society and the Boston Medical Library (two surgical, two medical, and one general).

Norfolk District Medical Society

January 27, 1925. Masonic Temple. Subject: "Some Trends of Medical Teaching and Medical Practice." Speakers: Drs A. S. Begg and W. P. Bowers.

February 24, 1925. Masonic Temple. Subject: "The Need of Periodical Physical Examinations and How to Make Them." Speaker: Dr. Francis H. McCrudden. A second speaker will be selected to present another subject at this meeting.

March 31, 1925. Tufts College Medical School. This meeting given over to Drs. Leary and Watters for the purpose of giving us a medical examiners' talk.

Norfolk South District Medical Society

Meetings will be held the first Thursday of each month from October to May, inclusive, at 12 noon, at the Norfolk County Hospital, South Braintree.

Suffolk District Medical Society

December 17. Medical Section, in association with the Middlesex South District Medical Society. "The Newer Drug Treatment of Heart Disease," Dr. Paul D. White.

January 28. General meeting, in association with the Boston Medical Library and the Middlesex South District Medical Society. "Some Experiences of a Medico-legal Pathologist" (lantern slides), Dr. George B. Magrath

February 25. Surgical Section, in association with the Middlesex South District Medical Society. "Pyelonephritis," Dr. Arthur H. Crosbie.

March 25. Medical Section, in association with the Middlesex South District Medical Society. "The Treatment of Pneumonia," Dr. Edwin A. Locke.

April 29. Annual meeting. "Hypertension and Longevity." Dr. Harold M. Frost.

Worcester District Medical Society

December 10, 1924. Worcester State Hospital. Subject and speaker to be announced.

January 7, 1925. Surgical meeting. Place, subject and speaker to be announced.

February 11, 1925. Memorial Hospital, Worcester. Papers will be read by the members of the hospital staff.

March 11, 1925. St. Vincent's Hospital, Worcester. Papers will be read by the members of the hospital staff.

April 9, 1925. Subject and speaker to be announced.

May 14, 1925. Annual meeting.